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EXPERIMENTAL EDUCATION AND THE NURSERY SCHOOL

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The nursery school is itself an interesting experiment in education, and not an altogether new one. Plato considered a community nursery as part of an ideal educational scheme and was careful to define education in a manner to include the pre-school period of childhood. About one hundred years ago—February 25 to March 7, 1825—Robert Owen, picturesque and irrepressible philanthropist, visited the city of Washington and discussed the nursery school, which was part of his plan for the redemption of the human race. His audience was described as one of the most distinguished ever gathered in the national capital, including the members of both Houses of Congress, the judges of the Supreme Court, the President, and the members of his cabinet.

In connection with his address Owen exhibited a model of a huge hollow square of buildings, of which he said:

> The model represents a square of buildings each side of which is 1,000 feet in length, and each side contains every domestic arrangement that can be required for five thousand persons. The square is intended to contain a complete school, academy, and university, in which a superior education will be given from infancy to maturity, and it will comprise the first combination of circumstances which has yet been formed to do anything like justice to the physical and mental powers of any human being.

Owen's scheme was not all pure aspiration; for in 1826, in Community House Number 2 of New Harmony, Indiana, Madame Neef, an associate of Pestalozzi, was conducting a nursery school in which more than one hundred young pupils were

enrolled. Owen was not only given to vast social experiments, but to more delicate ones, for a contemporary count from Saxony after a visit to his school describes an interesting invention of this versatile reformer:

> This was a plate, according to which, as Mr. Owen asserted, each child could be shown his own capabilities and upon which, after a mature self-examination, he could discover what progress he had made. The plate has this superscription: *"Scale of Human Faculties and Qualities at Birth."* It has ten scales with the following titles, from the left to the right: self-attachment, affections, judgment, imagination, memory, reflection, perception, excitability, courage, and strength. Each scale is divided into one hundred parts. . . . A slide that can be moved up and down shows the measure of the qualities therein specified, which each one possesses or believes himself to possess.

This psychometry followed the metric system, so the mental-measurement movement, as well as the nursery-school movement, came to its first expression in this frontier Indiana village which had been bought outright by a daring reformer a hundred years ago. Before we dismiss Owen, let us recall that no less an appraiser than Huxley accords him a high place in the history of elementary education.

A neo-nursery-school movement has arisen in England within the past decade as a new social device for overcoming the blighting effects of poverty, for securing health and nurture to children of pre-school age. In America it is that and it is something more. It is not restricted to children from underprivileged homes, and it is more closely identified with a scientific, exploratory interest in the educational psychology of the pre-school child. Because of this the American nursery school is in a position to make a definite contribution to the field of experimental education in the more technical sense of the term.

The possibilities in this direction may be briefly and concretely indicated. There are at least five fields of inquiry and research into which the scientifically tempered nursery school will inevitably enter: (1) the problem of individual differences, (2) the mental hygiene of stimulation and fatigue, (3) norms of personal-social behavior, (4) personality factors in education, and (5) methods of parental guidance.

The problem of individual differences.—The nursery school in its brief career has revealed anew the variety of human nature, for even children of pre-school age are not alike. What are the nature and the extent of all these differences? How early do they begin? How basic are they? Are the children from good homes superior? How right, how wrong, was Owen when he told John Quincy Adams that "external circumstances may be so formed as to have an overwhelming and irresistible influence over every infant that comes into existence, either for good or evil; to compel him to receive any particular sentiments or habits, to surround him through life, with the most agreeable or disagreeable objects, and thus at pleasure, make any portion, or the whole of the human race, poor, ignorant, vicious and wretched; or affluent, intelligent, virtuous, and happy?"

The fundamental psychological problem of individual differences has been mainly studied with reference to adults, adolescents, and school children. Investigation must be directed more and more to the period of infancy. If we study the problem in children of nursery-school age we shall soon have new threads to trace back to babyhood. Only by pushing the quest steadily down and back can we get the light we need on original human nature and the genesis of human deviations.

The mental hygiene of stimulation and fatigue.—The first question which the skeptical layman asks about a school for the child who "ought to be at home," suggests a fear of overpressure and prematuration. The question is not only justifiable but it is desirable. We need more scientific data to answer the question and to allay fear. The whole problem needs analysis and specification. Apparently the well-conducted nursery school sometimes has an effect which is the very opposite of overstimulation, and intelligent mothers report that the children are actually less restless and more relaxed under a systematic régime of normal activity. It is important that we should recognize the type of child who is injudiciously and excessively stimulated by an overcareless or oversolicitous environment. The nursery school will

help to discover this type and to define the kind of neglect that is wholesome.

The psychological or the behavioristic aspects of fatigue can be studied with profit among nursery-school pupils, for the defense of young children against undue exertion is more frank and more immediate than those of older children. Here we can get new glimpses into the mechanism of fatigue and the natural self-protective adaptations against strain.

The study of natural factors of safety should not, however, blind us to the possibility of subtle and even insidious forms of overstimulation. The nursery school inevitably creates a social organization which is different from the traditional domestic situation. In the ordinary home the young child is in the midst of adults and siblings who are separated from him by varying age intervals. In the nursery school the child is among peers or near peers. Indeed he is thrust into a community of coequals and comes under the potent influence of what nursery-school teachers call "the public opinion" of the group. Undoubtedly this very situation makes heavy demands upon the emotional equipment and social adaptation of the two-year-old and three-year-old citizen. There is at least a danger of overtaxation here which does not exist when the child is brought into conflict with his physical universe of building blocks, sand, and mud. The very fact that this danger of precocious ethical behavior and social conformance will vary enormously with the good judgment and practice of the nursery-school director means that we cannot too scrupulously study and safeguard the mental hygiene of the pre-school educational program. An experimental interest in the normal aspects of the mental hygiene of fatigue will itself be a measure of safety.

Norms of personal-social behavior.—Amazingly little is known in a normative way regarding the mental development of the pre-school child. Until a few years ago we lacked even height and weight standards for this relatively neglected period. The nursery-school movement will make increasingly insistent demands for definite standards of a psychological character.

In the field of psycho-clinical diagnosis such norms are indispensable. During the past six years the Yale Psycho-Clinic has been gathering data to define more concretely the behavior characteristics of normal pre-school children at ten stages of development from birth to the sixth year. We have included in this inquiry items relating to personal habits and home life in order to establish objective points of observation for estimating the social maturity of both the infant and the pre-kindergarten child. These have included: Does he give responsive regard to the face? Is he conscious of strangers? Does he use a spoon? Can he put on his shoes? Does he inhibit certain forbidden acts? Does he show bowel and bladder control? Can he go on errands? It is evident that such norms must have considerable elasticity, and that personal-social behavior will vary greatly with the educational environment. Even such variation, however, will be within certain normal limitations, and the nursery school must help to define these limitations more precisely.

Ordinary educational-measurement methods will not be applicable to the pre-school period of childhood. Fortunately we shall be obliged to develop a more individual and interpretive approach. It will be part of the task of experimental study in the nursery school to delineate working standards in the field of personal and social behavior. It is unnecessary to imitate closely the educational-measurement procedures of the elementary school in formulating such norms.

Personality factors in education.—Within recent years educational psychology has perhaps placed too much emphasis upon the factor of intelligence. Psychiatry and clinical psychology have helped to draw more attention to the importance of emotional factors in mental development. The nursery school is certain to reveal in clearer light the influence of personality traits and trends. The naïveté of the young child and the frankness of his emotional reactions in new situations should furnish new material for a better understanding of the genesis and modifiability of personality characteristics. We can study the psychology of personality to better advantage in the young child than

in the old child, and this study may serve to refresh our faith in the possibilities of education.

In connection with our investigation of pre-school norms, Miss Elizabeth Lord, made a study of the home behavior of fifty unselected four-year-old normal children, ranging in intelligence from dull to superior (I.Q. of 75 to 150). A record was made of all cases which presented personality or behavior problems. Minor, but by no means negligible, problems were discovered in eighteen out of the fifty children. There were three instances of enuresis, three of faulty food-habits including fastidiousness and vomiting, one of night terrors, two of tantrums, one of thumb-sucking, four of excessively inhibited speech, three of crying for long periods or too readily, and others of extreme shyness and fears. There is no way of classifying or indicating the seriousness of all these behavior problems. It is significant, however, that they are not confined to children of one intelligence group but are widely distributed. Of the eighteen cases in our group of fifty, five fell in the "dull" group (I.Q. of 75 to 83); three, in the "bright" group (I.Q. of 117 to 149); and ten, in the intervening average group. A similar study of unselected five-year-old children showed a comparable sprinkling of special behavior problems, and an even larger number of cases of enuresis.

With the assistance of Miss Ruth Washburn, we recently made intensive case studies of twenty-five kindergarten children, referred by their teachers as being in need of special educational provisions. Only one of these children proved to be definitely feeble-minded; seven others were classifiable as border-line or inferior from the standpoint of intelligence. Nearly all of the children in the group presented definite personality problems which were the symptoms of faulty home life and imperfect educational opportunity. In ten of the cases there was abnormal shyness, associated usually with extremely inhibited speech. Cases of excessive and unnatural silence are far from rare; psychologically they are very significant, for by their "mute, dumb mouths" they declare unwholesome states of personality which are all too common.

A large proportion of the children referred to the Yale Psycho-Clinic are of pre-school age. Many of the behavior problems which these pre-school children present are so complicated and so bound up with parental and domestic factors that an organized agency like a nursery school or a special guidance kindergarten is indispensable for their proper treatment.

The nursery school will prove to be nothing less than a laboratory for the constructive investigation of such behavior problem cases. It will be compelled to use the individual approach and the case-study method. This will not furnish a massive statistical result but, if these personality case studies are steadily accumulated and formulated from the standpoint of educational therapeutics, they are certain to increase both our knowledge of personality and our faith in the efficacy of education. It is in this general field that the nursery school will probably make its most significant contribution to the science of experimental education.

Methods of parental guidance.—If the nursery school, through the kindergarten or otherwise, becomes gradually incorporated into our educational system, it will undoubtedly be used for the training of parents as well as of children. Indeed the welfare of the pre-school child is conditioned so profoundly by the parent that the nursery school can scarcely escape the problem of adult education. Here too is a rich field for experiment and exploration. The whole question of how parents can be guided to meet the ordinary and special problems of child-care, constitutes a problem of pedagogical technique, which has not yet been attacked with the methods and the spirit of experimental science. In some ways this is the largest and most basic of all the problems which the nursery school has served to reveal to students of education.

CAN THE HIGH-SCHOOL PUPIL IMPROVE HIS READING ABILITY?

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Although reading is a tool which is useful in every high-school subject, and essential to most, the high school accepts many pupils whose ability to read is a year or even two years below the normal achievement of high-school Freshmen. The pupil who cannot, unaided, understand his textbook is certain to meet difficulties even in mathematics or laboratory science. The question, therefore arises, If the pupil has entered high school without sufficient reading ability, can he then be trained to read as well as most of his classmates? In other words, Is reading ability so closely related to intelligence that the pupil can do little to rise above his level?

Several teachers in two New York City high schools have cooperated in trying to answer these questions. One of these schools attracts practical-minded students, who for the most part are looking forward to some industrial or technical career. The other presents a more varied curriculum and prepares for both college and business. Consequently the two schools draw from nearly every element of the population in diverse parts of the city. The classes selected for the experiment represent different levels of ability from IX-A through XI-A.

The experiment began with twenty classes arranged in pairs. In one class of each pair every effort was made to improve the reading ability of the members. In the other, the teacher followed the methods to which he had been accustomed or which the class seemed to require. Because promotions are made at the end of each semester in New York City, the period of drill was only twelve weeks long. Absences from tests, together with other difficulties familiar to educational investigators, reduced the twenty classes to fourteen, and the 700 students to 331. Of the seven pairs of classes, there were four pairs in which the two

had almost exactly the same average intelligence, though it was not possible to pair the individual members within these classes.

In the drill classes the effort was made to discover in what way and to what extent the power to comprehend could be increased; the element of speed was not considered. John A. O'Brien has established well enough the possibility of increasing the speed of reading.[1] For the purpose of measuring compre-

TABLE I. INTELLIGENCE AND READING SCORES OF FOUR PAIRS OF CLASSES—TERMAN GROUP TEST OF MENTAL ABILITY

Class	Type	Mental Age —Terman	Thorndike-McCall Reading Test		Gain	
			Initial Score	Norm	T-Score	Months
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Grade IX–A						
161	Drill	13.4	54.0	61	+1.22	+3
151	Control	13.7	55.2	61	−1.43	−4
Grade IX–B						
241	Drill	14.2	56.7	61.5	−1.95	−7
261	Control	14.0	61.7	61.5	−3.32	−11
Grade X–A						
331	Drill	15.4	64.7	62.9	−3.00	−8
361	Control	15.7	68.3	62.9	−1.65	−4
Grade XI–A						
504	Drill	16.9	67.2	63.6	+3.07	+9
511	Control	16.9	68.9	63.6	+1.15	+3

hension in the present investigation, the Thorndike-McCall Reading Scale was employed because speed only slightly affects the score; even in the ninth year, the normal pupil completes the test in about twenty of the thirty minutes allotted. Only rarely does a dull pupil fail to attempt questions on every page. For the initial measure of ability three forms were given, and the average was taken as the true score. For the measure after twelve weeks of drill two forms that had not been set were given, and the average again taken as the true score. To make these

[1] *Silent Reading.* New York, Macmillan Company, 1922. 289 pp.

measurements uniform all booklets were rated by the same persons, two young women with experience in scoring these tests.

In the measurement of intelligence, the classes fall into two groups. In six classes the school already had scores from the Otis Group Intelligence Test, and the test blanks had been scored and the mental ages computed by committees of teachers, although it was later discovered that the scoring and the computations were in some need of correction. A few students had

TABLE II. INTELLIGENCE AND READING SCORES OF THREE PAIRS OF CLASSES—OTIS GROUP INTELLIGENCE TEST

Class	Type	Mental Age —Otis	Thorndike-McCall Reading Test		Gain	
			Initial Score	Norm	T-Score	Months
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Grade IX–B						
210.....	Drill	14.4	62.1	61.5	+2.45	+6
209.....	Control	16.0	65.9	61.5	+3.75	+10
Grade IX–B						
219.....	Drill	14.9	63.8	61.5	+0.87	+3
217.....	Control	15.4	63.2	61.5	+2.60	+8
Grade X–B						
458.....	Drill	14.9	63.6	62.9	+2.84	+9
415.....	Control	13.0	66.8	62.9	+3.76	+8

transferred into the school without taking any intelligence examination, consequently the six classes (Table II) in which these conditions obtained were not used in considering the mental age. The other group, the eight classes listed in Table I, took the Terman Group Test of Mental Ability. The booklets were rated by proficient markers and the computations checked. With these eight classes involving 169 pupils, the relations of reading to intelligence may be studied with as much assurance as group tests can provide.

Results

The results for the eight classes which took the Terman Group Test are given in Table I from which we learn that Class 161 was a IX-A group, in which an effort was made to drill the mem-

bers in ability to read with exactness. The average mental age according to the Terman Group Test was 13.4. Its initial T-score in reading, as measured by the average of three different forms of the Thorndike-McCall Reading Scale, was 54.0. At the end of twelve weeks the class has gained 1.22, representing about three months' progress. *Class 151*, a IX-A group, in which no special training in exact reading was given, started with a mental age of 13.7 and a T-score of 55.2. At the end of twelve weeks it had lost 1.43, representing a drop of about four months in ability to answer with precision the questions in the Thorndike-McCall Scale. The calculation of gain in months is made from the table of reading-age norms in the directions for using the Thorndike-McCall Scale. The amount of gain varies with the reading age of the pupil. It will be noted that the classes paired have approximately equal mental ability.

The results for the six classes which have only the Otis scores are given in Table II which is much like Table I, but the mental ages are not so accurately established, since the Otis Group Test was not scored with equal care. Moreover, in the control classes, various forms of oral drill in exact reading were devised as a contrast with the written drill employed in the drill classes.

An inspection of these two tables reveals the wide variety of reading ability which was represented in the group concerned. In Table I, Classes 161 and 151 are some two years below grade in ability to read exactly, while Class 241 is about a year and a half below grade. On the other hand the more selected XI-A pupils are above grade; Class 504 is more than a full year ahead and Class 511 some two years ahead. But these various initial abilities apparently have little influence on how much gain the class will make, or indeed whether it will gain or lose. One class gained as much as 3.76; another lost as much as 3.32.

Effect of Intelligence

Several of the teachers who cooperated in the experiment made predictions during the course of the twelve weeks. One said, "Of course, this class will not improve very much. It is

too stupid to learn anything. It hasn't enough intelligence even to read simple prose." Another remarked, "My class is getting along pretty well. It reads with great ease and ought to improve rapidly." The general opinion of the teachers was that the dull pupils would have difficulty in making higher scores on the final tests, but that those students who read accurately at the beginning of the term ought markedly to benefit from the training.

These assumptions can easily be tested. All the individual scores were thrown into distribution tables, and the correlations between intelligence and gain and between the initial reading

TABLE III. CORRELATION COEFFICIENTS

Class	Type	Intelligence —Gain	Intelligence —Reading A	Reading A —Reading B	Reading A —Gain
(1)	(2)	(3)	(4)	(5)	(6)
Grade IX–A					
161	Drill	−.218	+.585	+.592	−.118
151	Control	−.009	+.350	+.713	+.283
Grade IX–B					
241	Drill	+.189	+.716	+.410	−.314
261	Control	−.169	+.658	+.277	−.597
Grade X–A					
331	Drill	−.148	+.787	+.402	−.446
361	Control	−.078	+.751	+.668	−.439
Grade XI–A					
504	Drill	−.530	+.733	+.535	−.602
511	Control	−.068	+.425	+.669	−.677

score and gain were computed. These correlations are shown in Table III. This table is to be read as follows: In *Class 161,* in which drill in exact reading was given, the correlation between intelligence and the amount of gain in reading ability was —0.218; the correlation between intelligence and initial reading ability was 0.585. The negative coefficients in this table have been corrected from the original computations. Professor Edward L. Thorndike[2] lately pointed out in the *Journal of Experi-*

[2] Thorndike, E. L. "The Influence of the Chance Imperfections of the Measures upon the Relation of Initial Scores to Gain or Loss," *Journal of Experimental Psychology,* 7:225-32, June, 1924.

mental Psychology the misleading character of a negative coefficient. In the next issue of the same magazine Dr. Godfrey Thompson developed a formula which has here been employed to secure the coefficients set down. They are consequently as accurate as statistical science can attain with the data at hand.[3]

The third column in Table III shows how wide of the mark the teachers' predictions were. The true relation between intelligence and improvement is the reverse of what they expected. In general and with very many exceptions, the brighter the pupil, the less he gains. In the control classes this relation is not significant. In the drill classes, however, it is somewhat stronger, and in one of them (XI-A) it is marked.

Part of the explanation may be suggested by the fourth column. Half the classes have a coefficient of over 0.70. This indicates that the reading ability disclosed has a rather direct relation to the intelligence of the pupils. In two of the classes the relation is low. In the IX-A control classes the pupils have not developed the reading ability which pupils of their intelligence should have. They are about two years below the norm for high-school Freshmen, and this may explain the low coefficient of 0.35. In the XI-A control class, however, the reverse is true. Even the ability to understand which these bright boys and girls could be expected to attain has been surpassed. Their average ability in reading is about two years beyond the norm for their school grade. This fact is likewise accompanied by a low coefficient—namely, 0.425. When all the pupils in the drill classes are considered as one group, the relation between reading ability and intelligence stands at 0.79. Similarly for the control group the coefficient is 0.80. Normally, then, there is a clear relationship between general intelligence and ability to get the exact meaning from printed material. It would, therefore, be natural that the bright pupil would keep his reading ability somewhere near his maximum, and he would, on that account, be less likely to raise his score much by drill. On the other hand, the dull pupil,

[3] Thompson, Godfrey. "A Formula to Correct the Effect of Errors of Measurement on the Correlation of Initial Values with Gains," *Journal of Experimental Psychology*, 7:321-24, August, 1924.

who has found reading hard, has more room left for improvement and can make larger gains by conscientious practice.

Relation of Initial Ability to Gain

The sixth column of Table III shows the relation between the initial reading score and the amount of gain. The pupils who read most accurately at the beginning showed the least progress during the experimental period. The pupils who revealed least comprehension of the material at the beginning made most improvement during the twelve weeks of drill. The negative correlations establish this relationship. In Class 161, which began some two years below standard, this inverse relationship is almost negligible,—0.118. But in Class 511, two years ahead of normal classes in reading ability, the disproportionate gain is great, —0.677. Here the slowest pupils gained most and the brightest pupils actually lost ground making notably lower scores in the final tests. With these 169 pupils it was almost uniformly true that the better a pupil read at the beginning, the less he improved.

Influence of the Teacher on Gain

These general results, however, vary with the teacher. Table I reveals something of this influence. The teacher of the IX-A classes had backward pupils. She was able to give her drill class a gain of three months by her genial repetition of drill from week to week. The IX-B teacher was less successful with pupils also somewhat backward. He was much interested in the investigation and intelligent in his use of exercises, either oral or written, by which he endeavored to raise the level of comprehension in the drill class. Nevertheless, the score at the end showed a loss of ability to get the exact meaning, but the corresponding class that got no drill lost even more. The Thorndike-McCall tests themselves had been repeated so often—the last test was the fifth—that the pupils took them without the spur of novelty or eagerness. The teacher of X-A was occupied with administrative work and lost interest in the fortunes of her pupils in this experiment. The more she drilled, the less power the pupils dis-

played; they seemed to acquire a distaste for the exercises and tests; this was clearly reflected in the final score, which is three points below the initial score. Her control class lost only half as much.

The results in XI-A are quite exceptional. The teacher had already a first-hand acquaintance with educational measurement and could give expert direction to her pupils. Though the two classes had the same intelligence average, Class 504 seemed to the teacher to comprehend more slowly. Her impression is borne out by the lower initial score in reading, 67.2 as against 68.9. It was, moreover, at the beginning a noisy, lazy, and—in their own eyes—witty group, whereas 511 was always agreeable, even though it met in a less comfortable classroom than 504 did. In 504 the teacher set a great many written tests on the texts studied in class with questions similar to those in the Thorndike-McCall Reading Scale, just as the other teachers did; but in addition, she introduced a great deal of reading aloud, with attention to the exact meaning of each sentence. The class hour of 511 was devoted chiefly to the more general discussion of the problems broached in the reading. Moreover, 504 learned that it did not stand so well at the beginning as 511 and cherished a genuine desire to surpass its rival in the final measurement; 511, on the other hand, was somewhat bored by the final tests. Yet through the influence of the teacher both classes registered higher at the close of the study than at the beginning. This is the more noteworthy, because both groups were superior in both intelligence and reading ability to the normal XI-A class. These facts indicate that the young woman knew how to enlist the interest of her pupils.

The influence of the teacher is discernible also in Table II in which every class made some gain. The teacher of 217 and 219 used oral tests and discussions with the former while to the latter the written periodic tests were given. In 219 the tests were not often discussed, but the results of 217 show the greater effectiveness of the oral discussion. The same difference of method was employed by the X-B teacher, with more eagerness

and closer scrutiny of the results. He made sure in both classes, which were very dissimilar in ability, that each pupil understood how he had gone wrong in all of his unacceptable answers. In 458 the tests were written, but in 415 each answer was oral and was discussed before the next one was taken up. The pupils gained in this way a notion of how to attack difficulties which stood them in good stead when the final reading-scale forms were administered to the class.

The report of the IX-B teacher in charge of 209 and 210 is so interesting that it is given in her own words:

> To begin with, 209 and 210 were not composed of the same grade of pupils, so far as intelligence was concerned. The former was an exceptionally bright class, while the latter was rather below the average class in intelligence.
>
> In both classes we read *The Odyssey* and *As You Like It*. In 209 we read rapidly for the story, and then we proceeded to character study. "The wily Odysseus," "the heedful Penelope," "the discreet Telemachus," for example, furnished starting places from which we set out to collect evidence, as to the truth or falsehood of the epithets from the characters' acts. Again, a statement was made "The Greeks were religious" or "Shakespeare uses many archaic forms" and the class proceeded to collect evidence from their books. Perhaps the problem was to select Rosalind, Jacques, or some other character, to read through every scene in which he figured, to collect every reference to him by any other character and thus to arrive at a just estimate of his character. Thus by constant reference to the text, the student became familiar with the masterpiece.
>
> In 210, on the other hand, after rapid reading to get the story, the work resolved itself into an intensive study of certain passages. These were read silently and then questions requiring short answers were given. As long as this questioning remained oral, some good resulted; for a wrong answer always brought an objection from someone who proposed a different answer. This aroused real application to the passage and resulted in getting the correct answer. In the weekly written quiz I found this incentive painfully lacking. Almost everyone in the class was quite content to give, in the few questions that really required thought, the first answer that suggested itself. I found it impossible to overcome the smug content with which these pupils waited for the expiration of the time. Moreover, I felt that this overemphasis on certain passages rather took away from the unity of the book studied and did not produce the same interest in and love for it that were felt in 209.

This teacher's ability to adapt the method to the class before her produced the extraordinary result of larger gain by the bright

class than by the slow one. It must be observed, however, that her slow class was really slightly above the norm for the whole country —62.1 as against the norm of 61.5. This fact does not diminish the singularity of her achievement in so maintaining interest that one class gained six months and the other ten months in the course of twelve weeks of drill.

If one takes all of the drill groups in Tables I and II together, the mean gain in T-score is .98, on the average a six months' gain. Similarly, in the control classes the mean gain in T-score is .80. In other words, the gain in comprehension resulting from frequent written tests is slightly greater than the improvement that comes from good teaching by other methods. Pupils of high intelligence become accurate readers through regular school training. Only with exceptional teachers do they improve markedly under drill in getting the exact thought.

Conclusion

This investigation yields several conclusions. Bright pupils have ordinarily by their daily reading practice gained ability to comprehend the printed page, so that written tests similar to the Thorndike-McCall Reading Scale do not usually produce improvement. On the other hand, slower pupils are likely to improve if the teacher is able to maintain their interest and effort.

Similarly, because of the close relation between intelligence and comprehension in reading, pupils who stand high on the reading scale at the initial testing, are likely to lose interest in drills and tests and to obtain distinctly lower scores on the final tests. Pupils inexpert in getting the thought, however, may benefit from remedial drills and develop power.

Most important of all, the extent of improvement depends on the teacher. If the teacher makes sure that the remedial drill is actually producing a cure, if he shows the pupil what causes his deficiency and how it can be removed, if he maintains interest and continuously calls forth effort on the part of the pupils, then dull, slow readers can be taught to read more accurately and even brilliant pupils can be urged to a higher degree of comprehension.

The measurement of ability to "read with exactness" proved to be difficult. Every precaution was taken to secure accurate scores, yet the interest of the pupil was an extremely disturbing factor. In some cases pupils were apathetic at the beginning and did not register their true ability. In others they were bored at the close of the period of drill and failed to reach their standard of achievement. A teacher who knows them intimately and who is on such friendly terms with them that they will talk to him without disguise or reservation—such a teacher—might by a series of individual measurements arouse sufficient eagerness to control the element of interest and arrive at true scores of reading ability.

When it is recalled how essential reading ability is to progress in the high school, to say nothing of later life, it becomes the plain duty of teachers in every department to experiment with methods of increasing comprehension. Though a good many pupils may fail to improve, the tables recording the findings of this investigation show that success awaits the stimulating teacher.

A METHOD FOR COMPUTING ACCOMPLISHMENT QUOTIENTS ON THE HIGH-SCHOOL AND COLLEGE LEVELS

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This article develops a technique for extending the computation of accomplishment quotients[1] to students of the high-school and college levels. The method in common use, the division of educational age by mental age or of the educational quotient by the intelligence quotient, can be applied only to the elementary-school and junior high-school levels, since beyond that stage mental-test scores cannot be translated into mental ages nor can educational-test scores be translated into educational ages.

About thirteen hundred students at Ohio Wesleyan University were included in the study, which disclosed several significant facts. We found, for example, a tremendous amount of overlapping in the extent of effort put forth by students of high attainment as compared with those of low attainment. On the average, those who were making high grades were earning them by extra effort, and those who were making low grades were not exerting the full energy of such abilities as they had. Also, contrary to the general conviction that colleges are favoring their bright students at the expense of their dull ones, we found that the dull students were actually accomplishing, on the average, much more than were the bright ones. This was shown by a significantly high negative correlation between accomplishment and intelligence.

At Ohio Wesleyan University, as at many other colleges, the several letter grades have been given corresponding numerical values so that each student's marks may be converted into a point average.[2] A point average of 1 is required for graduation, and

[1] There is a tendency to use the term accomplishment ratio (A.R.) instead of accomplishment quotient.

[2] A is given a value of 3; B, 2; C, 1; and D, E, and F, 0. A student's point average is found by multiplying the number of hours he has in each of these letters by the numerical value of the letter and dividing the sum of these products by the total number of his hours.

is also a prerequisite to initiation into any fraternity. Students are dismissed from the institution if they fall below a certain point average and, of course, a certain minimum point average is the criterion of admission to all honor societies.

Our study of the accomplishment quotients of all the students at the university grew out of the conviction, on the part of some of the members of the faculty, that we should have a more just measure of the worth of students than this point average affords. Some students stand high in this respect with comparatively little effort because nature has favored them with capacities for learning easily, while others are obliged to work much harder to attain the same point average, or even a lower one. While it was obvious that we needed, for certain purposes, a measure of academic achievement as bare attainment regardless of any qualification based upon the individual's effort, there were other purposes for which this did not seem a fair index of merit. Particularly in disciplinary matters, in the denial to men and women of the right of admission to fraternities, and in all situations involving praise or censure for faithfulness or unfaithfulness in work, it seemed desirable to have a measure of success that would gauge a student's worth in terms of the fidelity with which he put to use such abilities as nature had given him, rather than in units that could be greatly affected by endowment from nature as contrasted with individual effort. It was thought that such a unit of measure, if it could be found, would be more just and more democratic than our present one. It could be made to stimulate the brighter students, who reach the required minimum point average of our present system without being compelled to give to the task anything like the full swing of their abilities.

A unit of measure is needed which will compel the brilliant youth to put into his studies as strenuous an effort to reach the minimum requirements as that which would be required of another of low ability in the attainment of the same minimum. Such a unit would place before the latter the promise of success in competition on an exact equality with the former.

This is a real problem; some students *are* making high grades with less effort than others put into making low grades, and many of our abler students are drifting on with fair success by using only a small fraction of their abilities. These facts our findings have established. Some evidence of the amount of overlapping is given in Table I. A study of each college class and of the lower ratings in comparison with each other, shows the same sort of overlapping for each class and for all cases where a higher rating is compared with lower ratings. It is evident from this showing that unequal degrees of effort earn for students equal rewards by our present system and even that, frequently, the

TABLE I. EXTENT TO WHICH STUDENTS RATED BELOW A SURPASSED, IN THE USE OF THEIR ABILITIES, THOSE WHO WERE RATED A

Rating of Students	Exceeded in Use Made of Abilities					
	Lowest Fourth of A Students		Lower Half of A Students		Lower Three-fourths of A Students	
	Number	Percent	Number	Percent	Number	Percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)
B	119	58	62	30	23	11
C+	165	47	87	25	39	11
C−	111	28	55	14	11	7
D+	21	12	8	4	.....	.....

Table reads: Of students rated B, 119 or 58 percent exceeded the lowest fourth of the A students on the use they made of their abilities; 62 or 30 percent exceeded the lower half of the A students in this respect; etc.

greater effort gets the lesser reward. Justice would seem clearly to demand a scheme of measuring merit more nearly in harmony with the individual's faithfulness to his duties.

On the other hand, however, in spite of this overlapping in individual cases, our data show that, on the average, persons who are making low grades are doing so at least in part because they do not work—because they do not make full use of the abilities nature has given them. This is proved by the fact that the median accomplishment quotient, which is our measure of the

extent to which individuals use their talents, increases as we ascend through point-average levels, as Table II shows.

Our data in detail show that the same generalizations hold in almost exactly the same way for each of the four constituent college classes considered separately. It is true, in every class, that on the average, those who are making low grades are making less than normal use of their faculties as measured in terms of accomplishment quotient, while those who attain high grades are making better than normal use of theirs. This is a significant finding. In the face of it, students earning low grades cannot claim that they are doing all they can. Such a quantitative showing could be made the basis of what ought to prove an ef-

TABLE II. MEDIAN ACCOMPLISHMENT QUOTIENTS FOR CERTAIN POINT AVERAGES

Point Averages	Equivalent Letter	Median A. Q.	Range—Middle 50 Percent	Number of Cases
.00— .49.....	D—	.625	.52 — .754	45
.50— .99.....	D+	.792	.71 — .882	170
1.00—1.49.....	C—	.945	.814—1.128	395
1.50—1.99.....	C+	1.038	.926—1.164	353
2.00—2.49.....	B	1.081	.975—1.188	207
2.50—3.00.....	A	1.166	1.051—1.31	87

fective appeal to them as a group to work up to at least their normal level of effort.

As indicated in our opening paragraph, we were obliged to develop a new technique for the computation of accomplishment quotients on this level. It is not customary to speak of mental ages beyond fourteen or sixteen; we used mental-test scores instead. Even more impossible is it for us to translate educational-test scores into educational ages here. A child has an arithmetic age, because he continues the study of arithmetic through all the school grades and his attainment is cumulative from first to last, but he could not analogously have an algebra age, a chemistry age, a sociology age, or a French age, since these subjects are begun late, at different periods by different individuals, and con-

tinued throughout comparatively short periods. We could not, therefore, employ the method of dividing educational age by mental age.

Our resort was, therefore, to translate the point averages of all students, and also their intelligence scores, into standard-deviation units, T-scores, and to get the accomplishment quotient

TABLE III. DISTRIBUTION OF THE STUDENTS ACCORDING TO POINT AVERAGES AND ACCOMPLISHMENT QUOTIENTS—ALL CLASSES COMBINED

Accomplishment Quotient	Point Averages						Total
	.00–.49	.50–.99	1.00–1.49	1.50–1.99	2.00–2.49	2.50–3.00	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
.30– .39	3	.....	.....	.....	.....	.....	3
.40– .49	6	.....	.....	.....	.....	.....	6
.50– .59	11	10	.....	.....	.....	.....	21
.60– .69	10	27	16	2	.....	.....	55
.70– .79	7	52	51	14	3	.....	127
.80– .89	3	47	84	54	17	4	209
.90– .99	3	5	97	70	42	8	225
1.00–1.09	2	16	71	95	51	19	254
1.10–1.19	.....	8	32	46	48	19	153
1.20–1.29	.....	3	22	29	21	13	88
1.30–1.39	.....	.....	12	18	12	11	53
1.40–1.49	.....	1	6	9	7	2	25
1.50–1.59	.....	1	1	9	1	6	18
1.60–1.69	.....	.....	2	4	2	1	9
1.70–1.79	.....	.....	.....	.....	2	1	3
1.80–1.89	.....	.....	.....	1	1	1	3
1.90–1.99	.....	.....	1	1	.....	.....	2
2.00–3.08	.....	.....	.....	1	2	.....	3
Total	45	170	395	353	209	85	1,257

by dividing the former by the latter. Since all of the distributions with which we had to deal were so nearly normal that the tables for the normal probability curve could safely be applied to them, this was not difficult. This method obviously utilized the principle of *relative position*. Any student who was making just normal use of his abilities would presumably stand in the same

relative position in the academic-attainment array that he would occupy in the intelligence array. The S. D. value of his academic average would therefore be exactly the same as the S. D. value of his intelligence score, and his accomplishment quotient would be 1. If he fell lower in the academic-attainment array than in the intelligence array, the S. D. value of the former would be less than that of the latter and his accomplishment quotient would be less than 1. For the opposite case, the quotient would be more than 1. Of course, this assumes that the mental tests properly measured his capacity to achieve and that his academic grades correctly measured his real achievement—assumptions which are only *roughly* true.

So far our method was simple, but we soon discovered a serious injustice. By this method of computing accomplishment quotients it is impossible for the student who ranks highest in the intelligence series to make an accomplishment ratio of more than 1, and he would need to stand absolutely first in academic attainment to get even that. Conversely the person who stood lowest in intelligence could not have an accomplishment quotient of less than 1 and chances are all in favor of his making more than 1. And this injustice was involved to the extent to which a student stood near to one end or the other of the intelligence array. Under those circumstances it is obvious that accomplishment quotients near the two ends could not have the same meaning as those at the middle.

In order to correct this defect we developed an empirical formula, which grew, however, out of the conditions that caused the distortion. The considerations on which it was based were these:

1. A correction is needed only to the extent to which a student is near one end or the other of the intelligence series, in order to offset the chances which operate wholly either for or against him while for others the odds are divided. He needs an addition at the upper end of the series and a deduction at the lower end.
2. Those students at the upper intelligence levels who exceed the normal accomplishment may be expected to earn as much above the normal, or the average, as do those in the middle of the

series. Correspondingly, those at the lower end may be expected to fall as far below normal. Moreover, an addition or subtraction should not be made except for those students who have exhausted their normal chances, or to the extent to which they have used up such chances.

The average deviation from the median for the middle quintile was—the average for the four classes—0.13 S. D. Assumption 2 just mentioned involves that those at the top in intelligence should have a chance to earn that much, *on the average*, above the normal. Some might earn more, others less, but our best guess as to what they would do if given the chance, would be that amount. He who stands completely at the top in intelligence and who also has used up all his chances by standing completely at the top in academic grades, should have the whole of this addition. To the extent to which he falls below the top in intelligence, or to the extent to which he fails to use up all his chances by falling below the top in attainment, he should have only a part of the maximum correction. The following formula satisfies these conditions:

$$\text{A. Q.} = \frac{5 + psd}{5 + isd} + \frac{.13}{(4 - psd)\ (4 - isd)}$$

where psd = S. D. value of student's academic point average,
isd = S. D. value of his intelligence score, and
5 = the value of the mid-point in the distribution.[1]

Extremely seldom will either his intelligence rating or his academic attainment go above + 3 S. D., and if 3 S. D. is substituted in the denominator of the correcting fraction, it is obvious that the result will be an addition of the whole .13, since each of the factors in the denominator will become 1 and their product 1. Also the added credit diminishes rapidly as one falls a little below the top in either achievement or intelligence and only a small percent of the cases receive an addition of more than .01 or .02.

[1] See also the note on page 99.

Purely arbitrarily, and according to custom, — 5 S. D. was taken as the zero point. Moreover, when so taken, it makes the range of our accomplishment quotients nearly parallel to those computed by other methods.

The formula for the lower end of the intelligence series is:

$$\text{A. Q.} = \frac{5 + psd}{5 + isd} - \frac{.13}{(4 + psd)\ (4 + isd)}$$

If, now, we replace S. D. units measured from the median with units measured from 5 S. D. below the median as a zero point, and also combine the cases for the two ends of the series into one equation, our formula for all cases becomes:

$$\text{A. Q.} = \frac{psd}{isd} \pm \frac{.13}{(5 \pm 4 - isd)\ (5 \pm 4 - psd)}$$

All double signs are to be taken as minus when the intelligence score is less than 5 S. D.; otherwise, plus. This formula is not so complicated in practice as it looks, and really the correction may as well be omitted except in those cases where both intelligence and academic attainment are above 6 S. D. or below 4 S. D., since anywhere between those limits the correction will be only .01 or less. Where many accomplishment quotients are to be computed, it is best to secure a table from which they and their corrections can be read directly for all possible combinations of intelligence measures and academic grades. The formula given above, or tables developed from it, can be applied wherever ratings of academic success are translated into a point-average system, whether in college, technical school, or high school.

The writer believes it would be very much worth while for college and high-school administrators to measure the success of their students in terms of accomplishment quotients. The following are some of the situations in which the findings of such measurement could be used:

1. In all cases of discipline that turn at all upon questions of faithfulness to college duties.
2. In deciding the number of extra-curricular activities permitted or advised, in the case of particular students.

3. In deciding the amount of extra work a student should be advised or permitted to carry.
4. In vocational counseling, or in giving advice regarding the student's course of study.
5. In deciding the advisability of re-admitting to college a student of questionable academic success.
6. In passing upon doubtful cases for graduation.
7. In deciding who shall be excluded from membership in fraternities.
8. In stimulating competition in scholarship among fraternity groups. Reports of group standing could be made in terms of the accomplishment quotient rather than in terms of the point average. Ways could doubtless be found for overcoming the danger that students might shirk the intelligence examinations in order to be in a position to make a higher accomplishment quotient.
9. In determining eligibility for participation in intercollegiate contests.
10. In appealing to students for increased effort. Appeal could be made to each student to reach a high accomplishment quotient rather than, as is now the custom, to make an A grade or to win Phi Beta Kappa. The former appeal would be democratic, since all would have an equal chance to respond to it, while the latter is undemocratic and unfair since it can have meaning only for the few with exceptional natural endowment.
11. Perhaps a new type of honor society might be instituted, based on high accomplishment with such abilities as one has rather than on mere attainment. This would be the only really democratic honor society, for it would be open as a possibility for all.[4]

One of our most interesting discoveries was the correlation between accomplishment and intelligence. Studies, previously made on elementary-school pupils, have shown a negative correlation between accomplishment quotients and measures of intelligence. But there is a wide-spread conviction that, unlike the lower schools, colleges cater to their more brilliant students at the expense of their duller ones, and that the former get the lion's share of opportunities. The writer shared this conviction and fully expected, as a consequence, a high positive correlation

[4] It is not to be understood that all of these uses are made of accomplishment quotients at Ohio Wesleyan University. By vote of the faculty, they are to be entered on the student's record, be available for anyone who wishes to inspect them, and be employed in such ways as the faculty or the administrative officers may, from time to time, decide.

between brightness and accomplishment. But the opposite turned out to be the case; there was, in all four college classes, a negative correlation of considerable magnitude between these two factors. Here are the Pearson coefficients:

Freshman class, r equals $-.295 \pm .047$
Sophomore class, r equals $-.54 \pm .036$
Junior class, r equals $-.58 \pm .039$
Senior class, r equals $-.61 \pm .025$

Is this not further evidence that our brighter students need more stimulus? Apparently the parable of the talents, when told of college students, needs to be reversed, if those at Ohio Wesleyan are typical. Of course a part of this showing may be due to the fact that our measures of academic achievement do not extend up far enough to do justice to the extra bright, when as many as twenty percent of the students make A's, and also our

TABLE IV. MEDIAN ACCOMPLISHMENT QUOTIENTS OF THE FOUR COLLEGE CLASSES

Class	Median A. Q.	Semi-Interquartile Range
(1)	(2)	(3)
Freshman	.938	.14
Sophomore	1.007	.125
Junior	.997	.141
Senior	1.03	.142

scheme of correcting may not add enough for some of the brightest, but it is not likely that either of these factors accounts for more than a small part of the negative correlation. It would be interesting, too, to know why the correlations increase so markedly as we go up from freshman to senior classes.

There seems also to be some significance to the behavior of accomplishment quotients as we go up the grades. They are much lower for Freshmen, on the average, than for higher classmen,

and, except for a reversal by a slight margin between Sophomores and Juniors, they tend to increase as we go up the grades.

The situation shown in Table IV may be due to one or more of several factors: (1) Freshmen may not yet have found themselves. They may need more counseling and stimulus than they get. (2) Many of the loafers may have left school before getting far through the college course. (3) Professors may hold Freshmen for higher standards *relative to their maturity*, than they hold upper classmen.

All of these factors probably enter, but certainly the third is a weighty one. Many college professors openly say that Freshmen cannot be expected to make high grades. Instead of marking them against freshman standards, they measure them by absolute standards of attainment—the same standards by which they measure upper classmen—even when they are segregated into classes exclusively for Freshmen.

Note on Formula for Accomplishment Quotient

Note—Dr. A. S. Otis has objected to the writer's formula and proposed a substitute: namely, to divide the academic attainment, reduced to sigma values, by the intelligence, put in sigma terms, after the latter has been multiplied by the coefficient of correlation between academic success and intelligence, and r_{AI} has been empirically adjusted until the correlation between intelligence and accomplishment quotients has become zero.

His reason, as I understand it—the matter having been taken up in rather hasty conversation—is as follows: the line of the means of the academic point-averages regresses from the line of relation so that at any point the latter falls only r_{AI} times as far above or below the mean as the former. For any given position in the intelligence series we can find the mean academic achievement that corresponds to it by multiplying the intelligence quotient by r_{AI}. Since this is the mean A, academic attainment, made by those with this I, we may take it as the "normal" or "standard" A for this I. The accomplishment quotient would then be the attained A divided by the derived one, that is,

$$\text{A. Q.} = \frac{\text{A}}{r_{AI}}$$

where each is measured from the mean. Starting from -5σ as a zero point,

$$\text{A. Q.} = \frac{5 + \text{A}}{5 + \text{I}.r_{\text{AI}}}$$

Since the theme of this article does not turn on the writer's particular formula but on the desirability of measuring accomplishment by some form of parallelism between academic success and intelligence, for which the best formula is probably yet to be found, I am submitting Dr. Otis' proposal and a criticism of it as a basis for comparison and discussion. In spite of its plausibility from the purely statistical standpoint, there seem to me to be several fatal objections to it in practice.

1. Accomplishment quotients derived by it would have no standard meaning. The range would depend upon the height of the correlation between measured intelligence and measured academic achievement. With a poor test the accomplishment quotient of a student at the top of the intelligence series could be as high as 1.50; with a perfect test it could not be more than 1.00. Indeed, the whole range of accomplishment quotients would tend to increase as the r_{AI} decreased, since the range of the denominator of the fraction would become less while the numerator remained the same. Surely a method of computation that gives accomplishment quotients with no standard meaning is not a practical method.

2. In taking the mean A corresponding to an I as the normal one for that I, we assume that the whole lag is due to the critical factor on which accomplishment quotients turn, namely, lack of effort. As a matter of fact most of the lag of the mean is due to the poorness of the test. To get a true accomplishment quotient we should divide a measure of what one *does* achieve by a true measure of what normal use of his abilities and efforts would *enable* him to achieve. The mean of the A's where they lag for many reasons of which effort is only one, does not give us the true standard to serve as our divisor.

3. This method violates common sense in the way in which it distributes gratuitous additions to accomplishment quotients. A student who stood at $+ 1\ \sigma$ in both intelligence and achievement, and whose accomplishment in view of the parallelism between achievement and ability would naturally be described by an A. Q. of 1.00, would, if $r = .60$, get by this method an A. Q. of 1.07; at 2σ, 1.11; at 3σ, 1.18.

Thus he gets nearly as much addition near the middle, where he has room to fling himself, as he does at the top where he has no room. There does not seem to be sufficient warrant for adding gratuitously .07 to his accomplishment quotient at 1σ or .11 at 2σ.

4. The method would be clumsy to extend to other colleges. The formula would have to be made anew for every college and high school, and every time a different test was used. Especially if the feature were added to "cut and try" until the negative correlation between accomplishment quotient and intelligence were compensated for, it would be too

hopelessly intricate to make it feasible as a practical procedure in the rank and file of colleges.

5. My method is closely analogous to the traditional one for accomplishment quotients, namely to put measures of mental maturity and of achievement in parallel series measured from the same zero point (birth in the case of the traditional method) and get the accomplishment quotient by dividing a measure of position in one series by a measure of position in the other, in such a way that parallel positions would give an A. Q. of 1. The method proposed by Dr. Otis gets away from that principle and gives to accomplishment quotients a different meaning from that which they have traditionally had.

DIAGNOSING STUDENT SHORTCOMINGS IN ENGLISH COMPOSITION

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The purpose of this paper is to show the value of diagnostic tests in discovering some learning difficulties which students encounter in the mechanics of English composition. By way of introduction, it should be stated that at the time this study was made the writer was serving a group of 103 students at Teachers College, Miami University, in the capacity of student adviser. At the close of the first six weeks of the college year, thirty-nine of the students were receiving failing or nearly failing marks in English composition. In order to discover some of their shortcomings and thus to help them out of their difficulties, a series of diagnostic tests was given. The results furnished the basis of this discussion.

The tests used were the Pressey Punctuation and Capitalization Tests and the Charters Verb and Pronoun Tests.[1] The results are presented in Table I. This table shows how well the students' scores compare with the established norms. Two students attained a perfect score in capitalization, three in verb usage, and two in the use of pronouns. The median score is higher than that for high-school Seniors in punctuation and capitalization, but lower in the case of verbs and pronouns. Four students failed to reach the eighth-grade standard in capitalization, one in punctuation, and twelve each in the use of verbs and pronouns.

[1] The Pressey Punctuation Test consists of thirty sentences designed to measure the various abilities to punctuate that are needed in one's written discourse.

The Pressey Capitalization Test measures by means of twenty-eight sentences the ability to capitalize in the more common forms of written expression.

The Charters Verb Test is designed to measure the ability to use twenty-two of the more common verbs in their various tense and number forms by the forty sentences comprising the test.

The Charters Pronoun Test uses forty sentences to measure ability to use pronouns in their various gender, person, number, and case forms.

Our chief concern, however, is to discover the individual difficulties which students encounter in the fields of punctuation, capitalization, verb, and pronoun usage. These findings are revealed in a series of tables; but space limitations make it impos-

TABLE I. SCORES ATTAINED IN THE VARIOUS TESTS

Pressey Tests Scores	Punctuation Test	Capitalization Test	Charters Tests Scores	Verb Test	Pronoun Test
(1)	(2)	(3)	(4)	(5)	(6)
			TEST SCORES		
29	1	.....	40	3	2
28	2	2	39	4	6
26	2	8	38	4	4
25	2	4	37	7	6
24	3	5	36	4	3
23	4	9	35	5	6
22	2	2	34	1	4
21	4	2	33	2	3
20	4	3	32	7	.....
19	2	2	31	2	1
18	5	2	30	.....	3
17	1	.....	28	.....	1
16	2	.....	.....	.....	.....
15	2	.....	.....	.....	.....
14	2	.....	.....	.....	.....
12	1	.....	.....	.....	.....
Total	39	39	Total	39	39
Median	21.1	24.9	Median	36.6	36.5
			GRADE NORMS		
XII	20.1	23.8	XII	37.2	37.4
XI	19.1	23.3	XI	37.6	34.7
X	17.3	22.8	X	33.9	33.1
IX	14.0	21.5	IX	35.2	31.2
VIII	12.4	20.6	VIII	35.0	34.8
VII	10.4	18.8	VII	33.1	32.6

sible to present more than one. The results from the punctuation test have been selected as typical; they are presented in Table II.

This table discloses a number of salient facts which, through comparison, are found to bear striking resemblance to those which were revealed by similar tables dealing with capitalization, verbs, and pronouns, respectively. One fact is that each field

TABLE II. MEASUREMENT OF PUNCTUATION ABILITIES

Students' Numbers	Manifested Inabilities																							Number of Inabilities per Student
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1														×						×					2
2					×	×							×							×					4
3	×																			×					2
4	×													×						×					3
5			×																	×					2
6				×	×			×	×		×	×	×	×	×		×		×	×				×	13
7	×										×		×						×	×		×			6
8	×																	×	×	×					4
9					×	×							×		×				×	×					6
10					×	×						×								×					4
11	×				×	×		×			×				×				×	×			×	×	10
12	×					×	×	×						×					×	×					7
13					×						×	×		×	×					×		×			7
14	×												×		×					×					4
15	×								×		×				×			×	×	×	×	×		×	10
16			×	×	×	×					×	×							×	×					8
17	×			×			×	×						×	×	×	×	×	×	×					11
18	×					×		×					×				×			×				×	7
19	×		×		×	×	×								×				×	×					8
20	×				×								×	×	×			×	×	×					8
21		×									×		×	×	×					×			×		7
22	×	×		×		×	×		×					×	×				×	×	×				11
23	×				×								×		×			×	×	×				×	8
24	×			×									×		×				×	×				×	7
25	×		×												×				×	×					5
26	×	×	×		×						×				×			×	×	×					9
27	×		×	×	×	×									×				×	×					8
28		×	×	×							×		×	×				×	×	×				×	10
29	×										×		×	×	×			×	×	×					8
30					×	×	×						×	×				×	×					×	8
31				×									×		×				×	×					5
32												×	×	×				×	×	×				×	7
33	×				×								×		×					×					5
34					×								×					×	×	×				×	6
35					×						×	×			×					×		×			6
36																				×					1
37	×	×	×			×		×			×		×	×	×				×	×				×	12
38	×					×								×	×				×	×				×	7
39			×	×	×		×		×			×								×				×	8
Total	22	5	9	9	17	13	6	6	4		12	7	18	15	22	1	3	11	25	38	2	4	2	13	
Percent	56	13	23	23	44	33	15	15	10		31	19	46	38	56	3	8	28	64	97	5	10	5	34	

NOTE—The abilities measured by the items in the Pressey Punctuation Test are:

1. A comma to separate words in a series
2. A comma to separate parts of an address
3. A comma to set off a direct quotation
4. A comma to separate parts of a date
5. A comma to set off slightly parenthetical or inserted expressions
6. A comma to separate clauses joined by "and," "but," "for," "as," etc.
7. A comma to set off obviously added elements at the end of a sentence
8. A comma to set off an appositive word, phrase, or clause
9. A comma to set off a clearly introductory expression
10. A comma to set off an adverb used independently
11. A semicolon to separate clauses of a compound sentence not joined by a conjunction
12. A semicolon to separate parts of a compound sentence containing commas
13. A period after an abbreviation
14. An apostrophe to indicate the omission of a letter or letters in a word
15. An apostrophe to show possession
16. Quotation marks to enclose a direct quotation
17. Quotation marks to enclose each part of a divided quotation
18. Quotation marks to indicate the title of a theme, story, or song
19. Quotation marks to call attention to words used with some special meaning
20. A dash to indicate a marked break in the progress of thought in a sentence
21. A question mark after a direct question
22. A colon after an expression that serves as a formal introduction to something that follows
23. A colon between hours and minutes in a statement of time
24. An exclamation point to indicate strong feeling or emotion

is a composite of many specific usages. Punctuation, for example, is not merely a matter of full stops, stops within the sentence, and special marks. It is also a matter of different kinds of full stops, such as the period, the question mark, and the exclamation point; different kinds of stops within the sentence, such as the comma, the semicolon, the colon, and the dash; and, different kinds of special marks, such as the apostrophe and quotation marks. Nor is this all, for a mark may serve one function in one situation and quite a different purpose in another. The comma, for example, serves one function in separating words used in a series and quite a different use in separating the parts of an address.

This specific nature of the form side of expression holds just as true in fields other than punctuation. Capitalization involves a score or more of particularized abilities. Verb usage turns out

to be a matter of using correctly many verbs in their various tense and number forms, while mastery of pronouns involves ability to manage many pronouns in their gender, person, number, and case forms. Wide individual variation characterizes the ability to manage the mechanics of expression; both tables afford abundant evidence on this point.

Training in specific usages must not be relied upon to transfer. Table II shows that all of the students were able to use a comma to set off an adverb used independently. Twenty-two of the same thirty-nine students, however, were unable to use a comma to separate words used in a series; seventeen, to set off a slightly parenthetical or inserted expression; and so forth. All of the students, except one, were able to use quotation marks to enclose a direct quotation. On the other hand, eleven were unable to use the same marks to indicate the title of a theme, story, or song; and, twenty-five to call attention to words used with some special meaning. Similar evidence is not lacking in the case of individuals. Student *1*, for example, encountered difficulty in using the apostrophe to indicate the omission of a letter or letters in a word, although he was able to use the same mark to denote possession.

The evidence on the transfer value of training is just as striking in the case of capitalization, verbs, and pronouns. One student who was unable to capitalize the names of educational and business institutions and words derived from the names of cities experienced no trouble at all with such closely related usages as capitalizing the names of social-betterment organizations and words derived from the names of persons. Another student had no trouble in using correctly "see," "sit," and other verbs, but failed in the use of "run," "lie," "has," "break," and "to be."

The difficulties which students encounter in the mechanics of English expression constitute a fourth revelation of the data. These individual shortcomings furnish points of departure in the further work of teaching. Table II will serve to show how the difficulties are located. When the table is read vertically, the shortcomings for the group as a whole are revealed. Thus,

more than one half of the students failed to use the comma to separate words used in a series. By reading the table horizontally, one discovers the difficulties of each student. Student *1*, for example, could not use the apostrophe to indicate the omission of a letter or letters in a word, and the dash to indicate a marked break in the progress of thought in a sentence.

A few of the inabilities which are common to the students as a group are listed below with the percent of the group manifesting the various inabilities:

	PERCENT
Punctuation—Inability to use—	
1. The dash to indicate a marked break in the progress of thought in a sentence	97
2. Quotation marks to call attention to words used with some special meaning	64
3. The comma to separate words used in a series	56
4. The apostrophe to denote possession	56
5. The period after an abbreviation	46
6. The comma to set off slightly parenthetical expressions	44
7. The apostrophe to indicate the omission of a letter or letters in a word	38
8. The comma to separate clauses joined by "and," "but," "for," and "as"	33
9. The exclamation mark to show strong emotion	33
10. The semicolon to separate clauses of a compound sentence not joined by a conjunction	31
Capitalization—Inability to capitalize—	
1. The first word of every line of poetry	38
2. The name of a particular section of country	33
3. The first word of a direct quotation	28
4. The name of a social betterment organization	26
5. A word derived from the name of a city	20
Pronouns—Inability to use—	
1. The nominative case form as a predicate complement	74
2. The nominative case form as the subject of a sentence	43
3. The objective case form after a preposition	43
4. A first person pronoun standing in a series at the end of the series	43
5. A pronoun in agreement with its antecedent in person	28
6. The objective case form after a transitive verb	20
Verbs—Inability to use the following verbs in their various tense and number forms:	
lie	69
to be	64
shall and will	43
see	25
have	20

It should be noted in passing that, aside from a few shortcomings which are more or less common to the group, the diffi-

culties are, in the main, individual. The inabilities that are common to the group should be met by group instruction, while those that are peculiar only to certain students should be overcome by individual instruction.

Summary and Conclusion

Analysis of the tests results shows that, all too often, even college students are deficient in abilities which presumably had been developed in the primary and intermediate grades of the elementary school. Witness, for example, the failure of students to capitalize the names of days of the week and to use the comma to separate the parts of an address. In order to improve the situation, an extensive program of educational diagnosis should be initiated early in the year and on all grade levels so that the results might be utilized throughout the year for more effective teaching. Needless to say, this program should have the enlightened and spirited support of the English teachers.

In the wake of an extensive program of educational diagnosis, a well-organized scheme of remedial instruction should follow. Deficiencies which are revealed by the former become the basis of the latter. Self-teaching practice exercises, by means of which children learn modes and principles of expression through much doing, should constitute an important phase of the remedial work. If satisfactory practice exercises are not now available, then sentiment should be created and expressed for this kind of teaching instrument.

The remedial program should also hold the pupils responsible for the use of all the English which they have learned. It goes without saying that the pupils will be taught what they need to know. The futility of the grind of merely memorizing a set of rules is apparent on every side. A comparative study of language and grammar scores shows that the same students who attained a median language score of 37 in pronoun usage made a median score of only 27 in grammar. Likewise, one student whose language score was 33 in verb usage had a grammar score of only 8. One of the greatest fallacies that education can com-

mit is to assume that a mere knowledge of rules and principles will eventuate in definite behaviors. Teaching in English composition, as in other fields, should drive straight at the attainment of definite abilities, first by teaching and second by giving the learner plenty of purposeful practice so that the reactions are permanently set in his nervous system.

A distinct need for much individual instruction is made apparent by the analysis. All of the charts show that, out of scores of usages, only a few offer difficulty for any considerable part of the group of students. Hence, the problem turns out to be largely a matter of instructing according to individual needs. Yet, with a pupil population of about twenty-five million and with a teaching staff of approximately three-quarters of a million, America is necessarily committed to the plan of mass instruction. Because of this necessity and because of individual variation in achievement and in capacity to learn, diagnostic tests and practice exercises become indispensable tools for producing definite results.

SIZE OF CLASS AND TYPES OF INSTRUCTION

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Of several recent studies as to the effect of class-size on classroom efficiency, almost all indicate that class-size is relatively unimportant in determining the amount that pupils profit from schoolroom activities. These various studies have included measures of efficiency in terms of tested results in the different subjects, improvement made during a limited period of time, promotion rates, and time spent by classes of different sizes in performing routine activities of the schoolroom. The experimental studies under controlled conditions made under the direction of the Bureaus of Educational Research at the University of Illinois and at the Ohio State University, agree in the conclusion that school achievements in large, medium, and small classes are not greatly different, nor do these studies favor any particular class-size. None of them, however, has considered that efficiency in classes of different size might be affected by the types of instruction employed.

For a long time school administrators have looked upon thirty pupils as a sort of ideal number for one teacher to manage and instruct. The rapidly increasing enrollment in most school systems these recent years has made it extremely difficult and even impossible to keep the number of pupils per teacher down to thirty. It is probable that the size of class will continue to increase. These increases are justified if large classes can be taught as effectively as small ones. The maintenance of the extra space, equipment, and personnel necessary for classes of thirty pupils or less is not justified unless an appreciable gain in the effectiveness of instruction is secured thereby. If the results are not greatly different for small as compared with large classes, then large classes are more economical of time, effort, and money.

In the light of our present conclusions, it would seem advisable to provide for handling larger classes more effectively than

to strive to reduce the size of classes. This provision would include many adaptations of presentation methods as well as devices and means of securing individual responses. Modern pedagogy is based upon learning through doing, upon every pupil's making some form of response. But too often, "response" is interpreted to mean muscular or vocal response. While these are the most obvious types of response, it must be remembered that other types of reaction, made quite as often, are equally as valuable. One might make mental or emotional responses as profound and even more significant to the processes of learning, without any apparent muscular activity and without speaking. If the responses, in order to be effective, must be of the muscular or vocal type, then it seems that the number of pupils in the class would limit the quality of the instruction; but if effective learning can be conditioned by mental or emotional responses, then the size of class may not be important. These types of response may be possible as easily for each individual in a large as in a small group. The large crowd or group of people, if held by the speaker, reader, lecturer, demonstrator, singer, performer, cartoonist, or actor, may learn as well from him as if they were in a smaller group. The chief necessity is that the person making the presentation be seen or heard.

Among the first tasks of an instructor is that of arousing proper motives, of creating in the pupils felt needs, of building backgrounds for learning, of setting up incentives that urge, or goals that appeal. With this effectively accomplished, the next task becomes one of presentation, of making impressions, of showing how, of developing understanding, and of stimulating responses. When this is accomplished, the third step is the checking up to see what responses have been made, whether the pupils have reacted, how ready, accurate, meaningful, and comprehensive the responses have been. If the pupils have not been taught by these processes, the teacher must start over again.

In arithmetic the pupil must *first know how* to solve problems and exercises; then he must *have practice in solving* them. Learning how to solve problems is a matter of instruction, of

explanation and demonstration; it may be done with a large group as effectively as with a small group, but no amount of instruction, explanation, or demonstration will ever make individuals facile in solving problems and exercises. Each pupil must go through the process himself, often many times, before he can solve problems and exercises correctly and effectively. Since each pupil must go through these processes, it is not a matter of class instruction, and the size of the group does not matter. Each pupil must go through the processes in order to learn them, and quite possibly it may matter little whether he sits alone or with fifty-nine other pupils. Of course, the teacher must arouse motives and interests and provide incentives, means, aids, and devices of the kind to guarantee that each pupil does go through the processes. Moreover, she must check to discover how well the processes have been carried out. Whether these things can be done as well in large as in small classes has not yet been demonstrated in any of the studies of class-size.

Several recent devices have been designed to furnish opportunity and material for pupils to apply individually what they have gained in the class period of instruction. The Courtis practice exercises in arithmetic, the Studebaker practice sheets, the Courtis exercises in handwriting, language, and silent reading, and the newer tests in silent reading, are good examples of this sort of material for supplementing, verifying, and applying the class instruction. These exercises seek to multiply the opportunities for individual responses and have been proved as useful to the learning process as the verbal responses given in the ordinary course of the class period. The fact that every pupil is furnished an opportunity to respond to each exercise is an advantage over the usual class method.

The responses need to be checked up for every individual, both as a diagnosis and a prognosis for future teaching. The standard tests in all their different forms and series provide ample means for checking on the pupil's learning. Both the practice exercises and the tests effectively follow up the learning processes begun during the class period. There is a dearth of

material of this kind, but it will no doubt be supplied abundantly if classes continue to increase in size, and methods of individualizing instruction are adopted. The use of these individualizing devices is not greatly limited by the size of the group.

Provision can probably be made for grouping forty or fifty pupils for instruction, then assembling them in still larger groups for follow-up, supplementary, and practice work where individual activities may be directed, supervised, and checked up. Such provisions would undoubtedly furnish adequate learning facilities for much larger classes in arithmetic, spelling, handwriting, and the formal side of language, than now prevail. A few devices and exercises of the kind mentioned are now available in these subjects. They provide individual practice and application with a minimum of instruction, explanation, and demonstration. In physical education, music, and drawing, the size of the class in most school systems is limited only by the number of seats or floor space available. Already, those in charge of these subjects have become adjusted to large class groups without apparent loss of efficiency.

The situation is somewhat different in the case of history, geography, physiology and hygiene, literature, and elementary science. These subjects are valuable largely because of their content and of the way in which they are learned. They are not to be learned by mere practice as is arithmetic computation or handwriting; they must be understood, comprehended, thought over. Since these qualities imply the use of development methods in teaching them, the size of the class might determine how well they may be taught. Recall of experiences, comparison, evaluation, and generalization are likely to be more limited in a large class. If the individuals of the class are to do much thinking, each pupil must be stimulated and given opportunity to express his opinions and judgments.

Scientific education has long ago discarded as wasteful the blind memorizing of facts in history and geography. The drill type of teaching has little place in these subjects. This leaves, besides the development types, the exposition and appreciation

types suitable for use in teaching the content subjects. These are already commonly used with very satisfactory results in the lower grades before pupils can read sufficiently to get information from the printed page. Pupils may acquire as much of the information of elementary geography, history, or science, by hearing it told well, as by some more common method of presentation. With this type of presentation, the size of the group is unlimited except by the seating capacity.

Presentation of poetry, music, pictures, and stories, through the appreciation type of class exercise may be as effectively done with large as with small classes. The imaginative appeal to the emotional phase of the individual's nature is perhaps more easily made in large groups. Where this type of presentation is used, the importance of class-size cannot be great.

It is assumed that whether one uses development, drill, review, testing, exposition, or appreciation types of presentation during the class period, each type will be supplemented by textbook readings, working out of exercises, problems, and assignments both before and after the class period. These are commonly of the application, verification, supplementing, or checking type. Exercises of this kind should be furnished in abundant variety for each lesson unit in the whole course of study. Current educational practice is not well supplied with such material for continuing and supplementing the work of the class period. This material is for individual use, however, and class-size does not determine how well or how poorly it is used.

No doubt we shall always have small classes, either through choice or for want of enough pupils to make up large classes. We need to secure greater efficiency in these classes as well as in the large classes, for if the relative efficiencies are to be determined, the small classes must be studied as well as the large ones. It is likely that few classes, large or small, are being taught with highest efficiency and the need is great for a nearer approach of both types to this maximum. It may be possible to approach the maximum more closely in the small group. This, however, must be determined experimentally where the instruc-

tion comes nearer to realizing its highest efficiency in both large and small groups than it does in the present average school system.

It is the purpose of the foregoing discussion to offer, in part, a probable explanation for the apparent lack of relationship of class-size to classroom efficiency as shown by most studies of class-size. The discussion further suggests the necessity for special investigation as to adapting different types of instruction and the nature and content of the subjects to classes of different sizes. The importance of the problem justifies such studies as will establish the relationship of size of class groups to all the important factors in classroom procedure.

THE SCHOOL CHILD'S CHOICE OF COMPANIONS[1]

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A school child's closest companion is usually one of his classmates. Selection of companions from among a group of associates is a part of every school child's life, but there is meager experimental evidence as to the basis of his selection and the characteristics that he and his companions have in common.

This report deals with the question of whether children who are close friends are similar or dissimilar in certain specific and measurable characteristics. The characteristics compared were chronological age, mental age, intelligence quotient, achievement in scholarship, extrovertive tendencies, height, and physical achievement. The study was made under ordinary school conditions in the Lincoln School of Teachers College, Columbia University. The children, sixty-three boys and fifty girls, were in the junior high school and were distributed about equally throughout the seventh, eighth, and ninth grades. The group was somewhat selected from several standpoints, and the findings are to be considered only suggestive in regard to what might be found in other groups under different circumstances.

OBSERVATIONAL SITUATIONS

An objective method was used for determining who were close friends within the school situation. Frequency of companionship was taken as the criterion of strength of friendship, and the frequency of companionship was determined through daily observation and records over a period of five months of the groupings of the children in the freer activities of the school.

[1] The work here reported was done during the school year 1924-25, when the writer was an associate in research at the Lincoln School of Teachers College, Columbia University. The writer wishes to thank Dr. Otis W. Caldwell, director of the school, for help given in this work and for the facilities placed at her disposal.

The observations included notations of the names of children seen together, with a brief description of the circumstances and, whenever possible, snatches of pertinent conversation.

It was impossible to record all the groupings of all the children because various groups were in different places at the same time. An attempt was made, however, to secure a random sampling of observations by watching the children in as many of the free activities as possible, by rotation of children observed and of places in which the observations were made, and by continuation of the observations over a period of time.

The situations that provided the greatest opportunity for groupings were the trips to and from the lockers between classes, the free-play period preceding gymnasium work, the school lunchroom at noon, class meetings, seating in assembly, and the classes in which a certain amount of freedom was allowed. The lockers for the girls were at one end of a hall and those for the boys at the other end of the hall. Between classes practically all of the children went to their lockers in pairs or in groups and stopped to chat for a few minutes. During the free-play period preceding the gymnasium work, the girls and boys in the three grades gathered in their respective gymnasiums for a half-hour or more before class and a free range of activity was permitted. For some of the regular gymnasium work choice of partners was permitted. Seating in assembly was optional within certain sections. The noonday lunch hour and weekly class meetings provided many opportunities for seeking out preferred companions.

It soon became apparent that the same children or groups of children were seen together in the various situations. If two children were frequently together at the lockers, the same children were also likely to be found playing together in the gymnasium or sitting together in class meetings and assembly. The total number of observations was therefore considered, irrespective of the different situations in which they occurred. The closest associate of a child was considered to be the child with whom he was observed the largest number of times.

Pairing of Children

The number of notations, or observations, on a given child ranged from 29 to 117 for the girls, with a mean of 72.0, and from 28 to 115 for the boys, with a mean of 67.4. The number of children with whom a child was seen ranged from 10 to 24 with a mean of 16.5 for the girls, and from 14 to 33 with a mean of 22.2 for the boys. That is, the boys tended to seek a slightly wider range of acquaintances than the girls. One pair of girls was observed together 51 times, and one pair of boys was observed together 38 times.

Each child was paired with the child with whom he was seen the largest number of times. Of the 113 children there were twenty-seven pairs of girls and twenty-nine pairs of boys for whom there were sufficient observations for the determination of companions. These pairs were studied with regard to similarities and dissimilarities in the seven characteristics mentioned.

Measurement of Characteristics

March 1, 1925, was considered the point of reference for the investigation and chronological and mental ages were calculated to this date. Stanford-Binet mental ages were calculated on the assumption of the constancy of the intelligence quotient. When more than one test was available for a child, the mean intelligence quotient was used. For some children as many as five tests had been made. Scholarship was based on the marks secured by the children for the first semester's work of the school year. For each child the average was computed of the marks obtained by him in all school subjects.

The degree of extroversion was determined by means of a rating scale worked out by Marston.[2] The scale consists of twenty paired items, or traits, so arranged as to conceal from

[2] The author is indebted to Dr. Leslie R. Marston for kind permission to use the scale. A detailed description of the scale and its use is included in *The Emotions of Young Children: An Experimental Study in Introversion and Extroversion.* University of Iowa Studies in Child Welfare, 1925, iii, No. 3. p. 99.

the rater the real significance of the traits. A score from 1 (extreme introversion) to 5 (extreme extroversion) is possible for each item, and the composite score ranges from 20, which is the score of an extreme introvert, through 60, which is balance between introversion and extroversion, to 100, which is the score of an extreme extrovert. Ratings by three teachers were secured for each child. The reliability of the ratings secured by Marston was 0.89 when comparable halves were used, and 0.71 when ratings by different persons were correlated. In this study the average correlation between different raters was 0.55.

Height was taken in tenths of an inch by means of a stadiometer by the instructors in physical education. Physical achievement was based on scores made in the California Decathlon Tests for Physical Achievement. These tests were given as part of the regular physical education program and were scattered throughout the school year, although the major portion was made in the spring. For the girls the Decathlon series included tests for rope climbing, baseball throw, running high jump, potato race, vaulting, jump and touch, traveling rings, traveling horizontal ladder, shooting basketball baskets, and goal kick, or 40-yard dash. For the boys the tests were the same except that in place of traveling rings, traveling ladder, and goal kick were substituted the 100-yard dash, broad jump, and pull up.

Results

Since the concern of the investigation was with similarities or dissimilarities of companions in the seven characteristics, girls and boys were ranked separately for each trait and the rankings of the two companions compared. Table I gives the distribution of differences in rank in these seven characteristics for the members of pairs of close associates. The maximum possible average difference in rank for the girls was 26.7. However, not more than three pairs of the twenty-seven varied as much as 25 ranks in any characteristics except extroversion and height.

One-third of the pairs of girls chose companions who were less than 5 ranks apart in the 50 possible ranks (or total number of girls) in extroversion traits and nearly one-third differed

TABLE I. DISTRIBUTION OF DIFFERENCES IN RANK IN SEVEN CHARACTERISTICS OF COMPANIONS FOR TWENTY-SEVEN PAIRS OF GIRLS AND TWENTY-NINE PAIRS OF BOYS IN A GROUP OF FIFTY GIRLS AND SIXTY-THREE BOYS

Differences in Rank	Chronological Age	Mental Age	Intelligence Quotient	Scholarship	Extroversion	Height	Physical Achievement
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Girls						
0- 4	6	7	6	8	9	3	6
5- 9	4	5	4	7	4	4	6
10-14	5	5	6	4	3	6	9
15-19	9	4	4	3	4	3	2
20-24	3	4	4	2	2	5	.....
25-29	.....	2	2	3	1	5	2
30-34	.....	.....	1	.....	2	.....	.....
35-39	.....	.....	.....	.....	2	1	1
40-44	.....	.....	.....	.....	.....	.....	.....
45-49	.....	.....	.....	.....	.....	.....	.....
	Boys						
0- 4	7	5	8	3	4	12	3
5- 9	8	3	6	4	2	5	10
10-14	8	4	5	3	3	1	2
15-19	4	7	1	6	4	6	2
20-24	.....	5	4	4	7	2	3
25-29	.....	1	1	2	3	1	3
30-34	.....	2	3	3	.....	2	.....
35-39	2	.....	.....	.....	.....	.....	.....
40-44	.....	1	.....	2	4	.....	5
45-49	.....	1	.....	1	2	.....	.....
50-54	.....	.....	1	1	.....	.....	1
55-59	.....	.....	.....	.....	.....	.....	.....
60-64	.....	.....	.....	.....	.....	.....	.....
Girls' Median	13.5	11.5	12.9	8.9	10.8	15.8	10.6
Boys' Median	9.7	16.8	10.5	18.8	21.1	7.5	13.5

by less than 5 ranks in scholarship. Half of the pairs of girls differed not more than 10 ranks in scholarship and extroversion, and one-third of the pairs differed not more than 10 ranks in chronological age, mental age, intelligence quotient, and physical achievement.

For girls the median difference in rank was least in scholarship (8.9) and greatest in height (15.8). The distribution of differences in rank in height seems to indicate that height was not an important factor in the selection of associates among the girls.

With the boys, however, the lesser differences in rank, or greater similarities, were in height, chronological age, and intelligence quotient, while the greater differences came in introversion-extroversion tendencies, scholarship, and mental age. Twelve of the twenty-nine pairs differed by less than 5 out of the 63 possible ranks in height, and half of the pairs of boys differed not more than 10 ranks in chronological age, intelligence quotient, and height. The distribution of differences seems to indicate that extroversion, scholarship, and mental age were not important factors in the selection of associates among the boys.

TABLE II. DISTRIBUTION OF DIFFERENCES IN RANK WITHIN A GRADE OF PAIRS OF COMPANIONS FOR TWENTY-SEVEN PAIRS OF GIRLS AND TWENTY-NINE PAIRS OF BOYS

Differences in Rank	Chronological Age	Mental Age	Intelligence Quotient	Scholarship	Extroversion	Height	Physical Achievement
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Girls						
0- 3	10	13	13	16	13	7	9
4- 7	7	9	8	6	9	8	10
8-11	9	5	5	5	5	10	6
12-15	1	.....	1	.....	.....	2	1
16-19	.....	.....	.....	.....	.....	.....	.....
Girls' Median	4.2	4.2	4.3	3.4	4.2	7.3	5.6
	Boys						
0- 3	10	6	17	8	7	13	10
4- 7	9	12	5	10	12	6	8
8-11	7	7	5	6	5	7	4
12-15	2	4	1	3	4	3	3
16-19	1	.....	1	2	1	.....	4
20-23	.....	.....	.....	.....	.....	.....	.....
Boys' Median[a]	4.2	6.8	3.4	6.6	6.5	4.1	6.3

[a] Sixteen to seventeen girls, twenty to twenty-two boys in each grade.

However, the group was a selected one in regard to intelligence since the median intelligence quotient was 122 for the boys and 117 for the girls. Hence the findings in regard to mental age probably do not represent what would happen if there were a normal distribution in mental age.

The fact that the two members of a pair were invariably in the same grade would operate to reduce the difference in rank in chronological age, mental age, physical achievement, and probably also in height, but would not affect the difference in rank in intelligence quotient, scholarship, and extroversion, since rankings in these factors are not dependent on growth or age. However, when the ranks were compared within each grade separately (Table II), the same tendencies were found, that is, the greatest points of similarities were in scholarship for girls and in height, intelligence quotient, and chronological age for boys. When grade rankings were used the points of greatest dissimilarities were also in height for girls, and in extroversion, scholarship, and mental age for boys.

Summary and Conclusions

A group of 113 children was observed in the Lincoln School of Teachers College, Columbia University, over a period of five months in order to determine the closest companion within the school of each of these children. A child's closest companion was considered to be the child with whom he was seen the largest number of times. Twenty-seven pairs of girls and twenty-nine pairs of boys were thus obtained and compared in regard to chronological age, mental age, intelligence quotient, scholarship, extroversion, height, and physical achievement.

It was found that the pairs of girls were more alike in scholarship than in any other characteristic and less alike in height, while the boys were more alike in height, intelligence quotient, and chronological age and less alike in extroversion, scholarship, and mental age.

TRAINING TILE-SETTING APPRENTICES

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The number of indications that schools are interested in industry and that industry is interested in education is increasing steadily. One of these indications is the attempt on the part of some trade associations to provide teaching material which can be used in the training of apprentices. This article is a brief description of the way in which one industry proceeded to:

I. Study the training problems of the industry

II. Analyze the trade to determine
   1. Major operations
   2. Work jobs
   3. Type jobs
   4. Learning order
   5. Kind and scope of teaching material

III. Prepare lesson text material
   1. The basic course—performance
      1) Introspection by an experienced tradesman
      2) Observation of an experienced tradesman by trained observer
      3) Trial by a novice
   2. The basic course—related technical information
      1) Analysis of needs in the performance of type jobs
      2) Information from literature
      3) Information from experienced tradesmen
      4) Check by experts

IV. Try out the teaching material in
   1. Experimental day school
   2. Part-time trade extension school
   3. Evening trade extension school
   4. Cases of individual apprentices

TRAINING PROBLEMS

The Associated Tile Manufacturers is a national trade organization composed of manufacturers of floor, wall, and decorative tile. Satisfaction to the owner of a building, who is the ultimate

consumer of their product, depends not only upon the excellence of the tile, but also upon its proper installation. The manufacturers do not sell directly to the ultimate consumer, but to tile contractors who employ tile-setters to make the installation, that is, to "set" the tile. Hence, the excellence of the work of the tile-setters is a matter of prime importance to the manufacturers, even though they do not directly employ any tile-setters.

A constantly increasing shortage of competent tile-setters and a corresponding decrease in the number of apprentices led the Associated Tile Manufacturers to secure in August, 1922, the services of an educational counselor who would study the situation, recommend a policy, and assist in formulating a constructive apprentice-training program. Since the apprentice problems of the tile industry do not differ materially from those in other lines in which skilled workers are employed, certain facts were used as guiding principles in attacking the problem.

Under the old plan of apprenticeship, the boy who wished to learn a trade received no organized instruction, but went on the job as a helper or as an apprentice, and picked up what information he could. The journeyman if he felt so inclined gave the boy some help from time to time, but the instruction was desultory and unorganized. The long period of apprenticeship in most of the skilled trades was necessary because of this unorganized method of teaching and learning the trade. It was a wasteful process at best and could be justified only as long as the pay of the apprentice and the journeyman was small. Conditions have changed; today the pay of the apprentice is from four to five dollars a day, while that of the journeyman is from ten to fifteen dollars. The long-time method of unorganized training has become too expensive, for it consumes too much of the time of both journeyman and apprentice. These results under present industrial conditions are unsatisfactory.

It became evident that the training of apprentices by the old pick-up methods must be replaced by some system of organized training which would conserve time for the learners and for their

instructors. Instead of having a journeyman spend part of his time for several years instructing one apprentice, it seemed more economical to group twelve or fifteen apprentices for training by a single journeyman worker, and to organize instruction so that, in the shortest possible time, the young workers could be taught enough to start on actually productive work. This meant some kind of basic course of training, but, in order to improve standards of production, it was necessary to give further instruction to these apprentices after they had started productive work. Therefore a supplementary advanced course for apprentices who had completed the basic course was necessary.

Analysis of the Trade

By means of a series of interviews with a tile contractor who was also recognized as a thoroughly competent tile-setter, a rough analysis of the trade was drawn up. No attempt was made to secure a detailed list of all of the minor operations in the trade. It early became apparent that nearly every job of tiling involved certain fundamental skills and that a large part of the tile work done consisted of plain floor and wall work. A careful analysis was therefore made of one job, namely "a typical bathroom job, floor and wainscoting."

A list was then made of the different jobs in the trade. Those involving identical or nearly identical skills or abilities were grouped together. As a result of this analysis and grouping, a list of some twenty-five groups of jobs was secured, and a typical job was then selected from each group. It was found that the great bulk of the work of the tile-setter fell into eleven of these groups. The abilities needed to perform the jobs in these eleven groups were also required to perform the jobs in the remaining fourteen, but each of the fourteen groups required some abilities in addition to those needed for the first eleven groups. It was, therefore, tentatively decided to build the basic course around the eleven typical jobs representing the eleven groups, and to build the advanced course around the fourteen typical jobs representing the remaining fourteen groups. Five of the jobs

around which the basic course was built were floor jobs; one was a base job; four were wall jobs; and one was a fireplace job. An analysis of the difficulty of these jobs placed them in the foregoing order.

In order to decrease the number of learning difficulties to be encountered in the first few jobs and to provide sufficient opportunity to acquire the fundamental skills, several additional floor jobs were introduced with only slight variations or modifications of the easiest floor job. This provided, as a total, a series of nineteen jobs for the basic course. These jobs were tentatively arranged in the order of the learning difficulties involved. Since this arrangement was quite different from the regular production order, it was not easy to convince the practical tile-setters and the representatives of the manufacturers who were conversant with the practical procedures that the order established by learning difficulties should be used. However, they took it on faith. The information on which the foregoing procedure was based was secured from the tile contractor before mentioned, one of his best tile-setters, and several representatives of the manufacturers who were familiar with setting as well as manufacturing. From the beginning a young man from the Associated Manufacturers' staff acted as reporter and secretary. Although he had considerable information concerning the tile industry, he was entirely inexperienced in setting tile.

It was determined that the basic course should consist of two parts: (1) specific directions for the performance of the nineteen type jobs selected, with only as much technical information as would be necessary to enable the learner to perform these jobs understandingly; and (2) a body of related technical information which would generalize the experience gained from performing these type jobs. Since the advanced course was to be used with those who had already gained experience in the trade, this course was made a combination of directions for performing the jobs and technical information relating to them.

Preparation of Lesson Text

The basic course, (1) performance.—The first course consisted of detailed directions for performing nineteen typical jobs of tiling. In the preparation of the text material of this part of the course, three men were used—an experienced tile-setter, his helper, and the reporter mentioned above. The tile-setter first described the job, and the reporter took down the procedure as described. Extended discussion and questioning expanded this description. The tile-setter or his helper then performed the job, and the reporter followed the procedure, carefully checking up his notes and stopping for correction wherever the written directions were at variance with the procedure of the tile-setter. In many instances, but not in all, the reporter then took his own manuscript and performed the job, following the directions he had written. Photographs were taken to illustrate the major operating points. At the close of each job the operations performed were listed in the order in which they appeared. This list of operations afforded the teacher checking points on each job. For each job the tools and materials used were enumerated and a set of questions for the learner was prepared.

When the directions for the first ten jobs were complete, a group of ten experienced contractors and setters called together from various parts of the United States carefully considered the manuscript as it was read aloud to them. Some corrections were made, and the procedure, as it finally stood, was approved as standard practice. The directions for the remaining nine jobs were produced in the same way and were submitted one at a time to the contractors and setters before mentioned. In some cases revised manuscripts were submitted.

The basic course, (2) related technical information.—The technical information thought necessary to supplement the course consists of a series of seventeen lessons. The scope of these lessons was determined by an analysis of the text material of the basic course. The technical information relating to the specific jobs was classified, and lessons were outlined to include all phases of such information. The lessons were then written in such a

way as to make general the application of the experience provided through the jobs. For example, in the basic course several kinds of mortar are used, and certain explanations and cautions are given in connection with their use. Accordingly, one of the related technical lessons is "Mortar-Setting Beds." This lesson deals with the various kinds of raw materials used in mortars, different effects obtained by combinations and why, conditions which influence the mixing and application of mortar—in short, the generalized theory and practices connected with making and using mortars. The information contained in these lessons was gathered from an extensive literature including a wide range of trade publications and from consultation with a large number of contractors, setters, manufacturers, and supply men. In manuscript form these lessons were critically read by eight expert craftsmen. The lessons were then revised and submitted to these men again. The list of jobs and theoretical lessons are given in Table I.

Trying Out the Course

In the spring of 1923 the first edition of the *Basic Course in Tile-Setting* was printed, and the first rough draft of the related technical lessons was ready. A group of seventeen novices, sixteen to twenty-five years of age, was selected and sent to Dunwoody Institute for three months' instruction in tile-setting. Education equivalent to the completion of the eighth grade was required, and, with one exception, the men were without experience in the trowel trades. Each young man had been selected by the Joint Arbitration Board of the city from which he came, and twelve cities, from Boston to Denver and from Minneapolis to New Orleans, were represented. The experiment was financed by the Associated Tile Manufacturers for the purpose of testing the effectiveness of the basic course, and also for the purpose of demonstrating to tile contractors the skill which novices could acquire by three months of training. All the boys completed the course. With two exceptions they are now working at the trade

TABLE I. ASSOCIATED TILE MANUFACTURERS' BASIC COURSE IN TILE-SETTING AND AN OUTLINE OF THE RELATED TECHNICAL INFORMATION

(The number of hours required for each job at Dunwoody is given in parentheses)

Performance		Theory	
Number	Job	Number	Lesson
1	Making the mortar-setting bed and placing 6″ x 3″ white vitreous tiles (7¾)	1	Popularity of tile work.
2	Beating in 6″ x 3″ white vitreous tiles (1¾).	2	How vitreous tiles are made.
3	Grouting and cleaning 6″ x 3″ white vitreous tiles (2).	3	Beating in.
4	Setting a plain floor, 6″ x 3″ white vitreous tiles, broken-joint style, spaced joints (5¾).	4	Grout and grouting.
5	Setting a plain floor, 6″ x 3″ white vitreous tiles, block-joint style, spaced joints (3½).	5	Concrete-setting beds.
6	Setting a plain floor, 6″ x 3″ white vitreous tiles, basket pattern, trowel joints (5).	6	Mortar-setting beds for floors and other horizontal surfaces.
7	Setting a plain 2″ hexagon floor (5¾).	7	Cutting and drilling tiles.
8	Setting a plain floor of ¾″ square ceramic mosaic, broken joint (7¼).	8	The manufacture of tiles other than vitreous ones.
9	Setting a ¾″ square ceramic mosaic, broken joint, field with a Grecian key border (6).	9	Preparations of surfaces to receive foundations for tile work.
10	Preparing for and setting 6″ x 6″ base and a plain floor of ¾″ square, broken joint, ceramic mosaic on wooden construction (23).	10	Establishing levels.
11	Preparing for and placing a concrete-setting bed on a counter-sunk wooden floor and setting 1″ hexagon tiles in relays (14).	11	Scratch coats.
12	Preparing for and placing scratch coat on a brick wall and setting 6″ x 3″ glazed tile, broken joint, with 6″ x 2″ cap and 6″ x 6″ base (21¾).	12	Mortar-setting beds for walls, other vertical surfaces, and ceilings.
13	Setting 4¼″ x 4¼″ glazed tiles, block-joint style, and 4¼″ x 2⅝″ cap and 4¼″ x 4″ base, with string joints (29¾).	13	Tile-trimmers.
14	Setting 4¼″ x 4¼″ glazed tiles, broken-joint style, with 4¼″ x 2⅝″ glazed cap and 4¼″ x 4″ base (15).	14	The tile-setter's tools.
15	Preparing a wooden partition and adjoining brick wall for tile work and setting 4¼″ x 4¼″ glazed tiles, cap, and base, straight or block-joint style, with an outside corner formed with quarter round combinations and a square inside corner (38½).	15	The care and protection of tiles.
16	Setting 6″ x 3″ glazed tiles, cap, and base, broken-joint style, with interlocking outside and inside corners formed with radius combinations (43¾).	16	The interpretation of working drawings.
17	Setting 4¼″ x 4¼″ glazed tiles, cap, and base, block- or straight-joint style, with an outside corner and inside corner formed with quarter rounds (31).	17	The tile-setter's responsibilities.
18	Sloping to drains and setting cove, inside corners and 1″ hexagon ceramic mosaic on a shower-bath floor (17¼).		
19	Preparing for and setting 6″ x 6″ dull glazed tiles on a fireplace (41).		

and excellent reports are received from their employers.[1] Ample evidence indicates that all of these young men were further ahead at the end of their three months of training than the average apprentice is at the end of two years of service. The boys from the Dunwoody course have now been at work two years. We propose to follow them up after they receive their journeyman cards, to find out how they compare as workmen with others who have learned the trade by the old pick-up methods.

The Dunwoody Institute operated seven hours a day. For six hours, the boys worked in the shop setting tile; one hour a day they met in the classroom for purposes of studying and discussing the technical information related to tile-setting. The tile-setter who assisted in the preparation of the course taught the shop work. The young man who wrote the course taught the related work and made constant revisions of each part as experience showed this to be necessary. The tile-setter attended the class and took part in the discussion. The Dunwoody staff, interested in this experiment, gave valuable advice and assistance.

As the course was presented at Dunwoody Institute the total number of hours spent in the shop was 403½ and the total number spent in the classroom was 60, making a grand total of 463½ hours. Of the shop time, 320½ hours were devoted to the nineteen different jobs; the number of hours for each job varying from 1¾ for Job 2 to 43¾ for Job 16. (See Table I). The remaining 83 hours were devoted to tests, demonstrations, and necessary auxiliary activities, and no changes were made as a result of this work. The course has also been tried out with experienced helpers in both part-time schools and evening classes. One of the part-time schools was at Los Angeles and one of the evening classes was at Pittsburgh. A brief statement concerning each of these centers will be given.

[1] The two exceptions were due to the fact that in selecting these boys to attend the course, there was not a clear understanding between the contractors and the union that the boys were to be received into the trade as advanced apprentices, according to the agreement between the International Union and the National Association of Contractors.

The Los Angeles Continuation School.—A group of apprentices spent alternate months in school and at work. The classes met eight hours a day of which seven were spent in the shop and one in the classroom. The course was divided into three units, namely, floor work, wall work, and work on mantels and fireplaces. On each of these units the apprentices spent one month in school followed by one month of application at work in the trade. With two exceptions, all those who started the work completed it and are now employed in the trade. One dropped out because of inability to do the work and one was asked to leave for disciplinary reasons.

The Pittsburgh evening school.—Twelve persons who were employed during the day as tile-setters' helpers attended this class. They met four hours a night twice a week for 24 weeks, with an extra four hours in the afternoon once a week during the last eight weeks. All these helpers completed the course and are now employed in the trade setting tile. Some modifications of the course were made in each of these cases, but in all essentials it held good.

On June 1, 1926, the Associated Tile Manufacturers and the Tile and Mantel Contractors Association of America, in cooperation with Dunwoody Institute, opened a National School for tile-setters. The basic course in tile-setting, the preparation of which is described in this article, was followed. Eighty scholarships covering all cost of instruction, transportation from the home of the holder of the scholarship to the school and return, and a weekly allowance sufficient to cover one-half the cost of board and lodging for thirteen weeks, was offered by the manufacturers and the contractors. This school was recognized as an approved school under the agreement between the contractors and the unions.

Editorials

THE TEXTBOOK AND ITS VOCABULARY

The textbook contains too many hard words. This is the all but unanimous verdict of the many recent vocabulary studies. For, you know, vocabulary studies are now quite the vogue—and the vogue is a good one. It is true that not a few of these studies are inconsequential, that some of them fail to see the woods for the trees, and that most of them make loose assumptions even as to what constitutes a word. But with all their faults these studies point in one direction—the textbook has too many words which the children cannot understand.

For example, our attention was lately called to the analysis of a textbook for use in the fifth and sixth grades. This analysis was based on 22,000 running words selected from various parts of the text. About one in six of these running words was either (1) a proper name (probably unfamiliar), or (2) was rated higher than the sixth grade according to our present knowledge of graded vocabularies, or (3) was not on such a graded list in any form, or finally (4) was on such a list but was used in the textbook with a meaning quite different from that to which children are accustomed. If you make the best merger you can of the existing half-dozen children's graded vocabularies and if you then compare the textbook offerings of any grade with this list, you will wonder how children contrive to learn as much as they do in school.

Take the geography textbook for example—not the little book but the big one, the second of the ordinary two-book series. On any given page encircle all the words which according to any reasonable standard the children of the sixth grade are unlikely to know. You will find the page peppered with these unfamiliar

forms. In a certain section of such a book it was found that the average page contained about 14 new proper names. At this rate the entire book would contain well over 3,000 proper names in the text alone. In addition to proper names, there were 18 words which were likely to be new to sixth-grade children. The unfamiliar words on eight pages near the beginning of the book to which we are referring were arranged in alphabetical order. The ones beginning with the first three letters of the alphabet happened to be about the equivalent of the unfamiliar words appearing on a typical page. These words were: abandoned, abundant, accumulation, advance, agricultural, appendix, arrangement, associating, available, bowlders, brassware, broadened, chamber, compressed, concerned, construct, contrast. This part of the geography textbook was intended for fifth-grade children.

In what we have said about strange words we have included words used with different meanings from those to which the children are accustomed. And why not? Do you think that because a child knows *bear* as a noun he will know *bear* as a verb? Will a knowledge of *make* in the phrase "Mother makes me do this" suffice in the situation, "7 and 8 make 15"? May not a child know *last* perfectly well in such an expression as "John was the last boy to come into the room" without having the slightest notion of the meaning of *last* as a verb, far less of its meaning as a noun? In much of our solemn thought about educational matters we still labor under the influence of a naïve tendency to believe that things having the same names are thereby the same. *Bear* as a verb is a *different word* from *bear* as a noun. The word *make* is not one word but at least two. One may read something about a shoemaker's *last* without the least enlightenment derived from a knowledge of *last* as an adjective or a verb.

The overambitious vocabulary with which textbooks are loaded is not in itself the whole difficulty. It is rather the index of the difficulty. The author or editor who is so far removed from a knowledge of children as to use an adult vocabulary,

does other things equally inappropriate. The result is a text which his learned colleagues may applaud but which merits, and doubtless in some quarters receives, the curses of childhood.

It is entirely true that the vocabulary of a textbook should contain a certain rather large number of new words. No doubt many of these words should be of a technical character—technical, that is, to the subject in question. How many there should be of these no one knows and a determination of this for each of the major subjects is suggested as a worthy research problem. Nor would we have our textbooks avoid the use of new words in other than technical senses; but these new words quite clearly may be too numerous, and it is our firm belief that they are now too numerous in any textbooks with which we have come in contact. Moreover, whether numerous or few, the new words—that is the words beyond a reasonable standard appropriate to the grade which is to use the book—should be identified. It should be just as much a part of the author's business to know the technical, semi-technical, and literary words with which he is loading his text as it is for him to know the facts of his subject-matter. When these words are known, it then becomes possible to provide for their gradual introduction, their frequent initial repetition, and their recurrence in later pages of the text. It is impossible to estimate how great an advance in the mastery of a subject might arise from a skillful—that is from a truly psychological—blending and repeating of verbal matter.

One trouble is that the textbooks have been too predominantly in the hands of subject-matter specialists. These men are scientists, or *litteratcurs,* or linguists, intent upon the development of their subject. Not infrequently they are without public-school experience or educational training. Under these circumstances only the editorial office of the publisher stands between the author and his uttermost.

What we need in the revamping and re-creating of textbooks is the cooperation of the subject-matter specialist and the educational specialist. Occasionally these may exist in the same individual, but more and more will it be true that Smith *and*

Jones, Robinson *and* Brown will be the joint authors of our textbooks. One will furnish the logical, the scientific, the scholarly point of view with respect to the subject in question, the other will "put it over." He will know children not alone as to their vocabulary but as to the activities in which they engage and the interests which actuate them. He will know how to keep within reasonable limits. He will know how to make the material attractive. He will know how to make it teachable. All the correct scholarship in the world will be ineffective if it is lost to the audience for which it is intended. Let the expert in this or that branch of knowledge satisfy the inner circle of experts to which he belongs—and he must satisfy them of course; we have no quarrel with him on that score—by treatises as learned and as esoteric, as recondite and as technical as his competence may permit and his inclination suggest. But when he writes for children let him first gather wisdom from the study of children, or else let him share his authorship with one who can bring to the combination the wisdom he lacks.

It is not a question of vocabulary alone. The heavy vocabulary burden is but an index, a symptom, an outward manifestation of an essential deficiency. Our present textbooks are too hard for the children for whom they are intended; they are permeated with the adult point of view. One indication of this, and it is an indication which we can easily identify, is the inappropriateness of the vocabulary in which the textbooks are written.

B. R. B.

Reviews and Abstracts

WEISS, ALBERT PAUL. *A Theoretical Basis of Human Behavior.* Columbus, Ohio, R. G. Adams and Company, 1925. 428 pp.

The controversy now being waged around the philosophical and scientific issues involved in behavior psychology should not be allowed to obscure the significance of the educational principles which follow from this new point of view in psychology. Learning as habit formation finds strong support while the comparatively vague theories of learning as conceptual progress are seriously weakened. Behaviorism overshadows mentalism in its contributions to at least primary education.

Whatever may be his attitude toward the new psychology, the reader of this careful work by one of the more tolerant and dispassionate exponents of the so-called behavior psychology will admire the exceptionally able treatment of the foundations of psychology which this book affords. It is not a textbook presenting the facts of psychology, but rather a systematic examination of the assumptions and postulates which underlie psychology as a science. In this undertaking the author performs a long-needed service for psychology. Systematic, physical monism presented with unusual consistency and clearness characterizes the treatment which presents a logically evolved non-psychic psychology free from the dogmas, obscurities, and subterfuges of so many behaviorists.

For the writer, behaviorism in psychology is merely the name for that type of investigation and theory which assumes that man's educational, vocational, and social activities can be completely described or explained as the result of the same (and no other) force used in the natural sciences (p. 7).

In examining these forces the author is naturally led to some philosophical or speculative considerations. In defense of this effort he says:

I do not agree with those psychologists who protest against the introduction of *any* theory of reality into psychology. As long as psychologists refuse to take a stand on some theory of reality, any attempt to reach an agreement as to the causes of human behavior must be futile (p. 39).

In his search for the ultimate bases of human behavior the author adopts the electron-proton type of metaphysics as best adapted for the study of human behavior. In this he presents a coherent development of the mechanisms of human conduct which dispenses with what has so long been the problem of psychology, namely, consciousness.

It would be unfair to the author to abstract his discussion of the vital problems in psychology. The thoughtful students of psychology and educational psychology cannot afford to neglect the complete presentation. It is sufficient for review purposes to state that the author has courageously, dispassionately, and effectually examined the mechanics of human behavior. He also has en-

deavored to interpret the major response categories of traditional psychology in terms of the underlying postulate on which he stands, namely, man as an adaptive mechanism whose complex forms of reaction are mere laboratories of electron-proton relationships.

It is probable that those who are in search of psychological information tied up in neat packages may be disappointed in this book. But the author has performed a greater service by providing psychology, education, sociology, and those other sciences to which psychology is propadeutic with a substantial, theoretical foundation. That many readers will violently differ from the particular, theoretical basis adopted by the author there is little doubt. Dr. Weiss, himself, has elsewhere recognized that the mind-body relationship is essentially a psychological problem that must be settled by psychologists and suggests at least seven different theoretical bases for solving this relationship.

EDGAR A. DOLL

Vineland, N. J.

MILLER, HARRY LLOYD, and HARGREAVES, RICHARD T. *The Self-Directed School.* New York, Charles Scribner's Sons, 1925. 412 pp.

I know of few books in any field which contain as many ideas as this one. I am acquainted with no book in any field in which the ideas are presented in such confusion. It is worthy of the reading of every student of education, but it is much more difficult to read than it needs to be. The plan of organization, if there is any plan, is based upon questions and answers. Frequently questions are unanswered. Questions follow, one upon another, with little relation to each other. Much of what is found in one chapter could just as well be placed in another. A topic which should be treated completely in one chapter is scattered through three or four. To make the volume really usable, in a course devoted to secondary education, an additional index in which the questions and answers are grouped according to some logical and workable scheme is desirable.

In spite of faults of organization and style, the volume is decidedly worth while. Two intelligent and earnest school men have seriously attempted to present stimulating and fruitful ideas concerning the sort of secondary school democracy must develop. After setting forth certain guide lines and principles for the promotion of creative thinking, the authors take up the problem of meeting the needs which grow out of individual differences, the question of curriculum, a proposition that the secondary school is for all of the youth of the nation, and a consideration of school activities and guidance. In my judgment, the high-school administrator will find the last two chapters the most helpful.

I predict that to the psychologist this book will be interesting and irritating. The authors take definite issue with such psychological doctrines as the constancy of the intelligence quotient. They challenge the practice of grouping on the basis of differences in intelligence. Emphasis is placed upon the doctrine of developing powers, of developing aptitudes, of developing capacities of various sorts: "The cause of scientific education is not advanced by setting forth in 1920 the assumption that the intelligence quotient is perma-

nent, and in 1924 modifying that assumption to the extent of showing the general unreliability of the reliability of the intelligence quotient. . . . Any capacity or power is an achievement, not a donation.''

Keep this volume on your desk. Do not attempt to read it through. Pick it up whenever you have a spare moment and open it at random. On the first page you may read something stimulating; and on the second page something which you will question or oppose.

WILFORD M. AIKEN

John Burroughs School, St. Louis

MOORE, ANNIE E. *The Primary School.* Boston, Houghton Mifflin Company, 1925. 340 pp.

A survey of the professional literature of the past few years indicates a growing scientific interest in the early years of childhood. With greater and greater frequency psychologists, physicians, criminologists, and educators are directing attention to the importance of these formative years. In the wealth of literature that has appeared, it is a matter of surprise to find so few books dealing comprehensively with the educational problems of the primary schools. Authoritative studies on reading, writing, spelling, arithmetic, literature, hygiene, health, juvenile delinquency, and psychology, are numerous, but few have attempted to combine these separate treatises into a program that brings together scientific theory and classroom procedure for the training of children from the ages of six to ten. Those familiar with this need will welcome the recent book, *The Primary School.*

As stated in the Preface, ''Prevalent defects in childhood education are pointed out for the purpose of finding a remedy . . . . an effort is made to show that modern theories of education are workable wherever directed by intelligence and good will.'' This point of view is convincingly established in the first six chapters. The remaining eight chapters discuss the various phases of reading, literature, language, arithmetic, and handwriting. Descriptions and discussions of methods are supplemented by a wide range of classroom examples. These offer much that will encourage and stimulate teachers who are attempting to transform the lockstep method of the recitation by laying emphasis upon the initiation and execution of children's purposes and plans as a basis for primary-school training. As a definite suggestion for initiating such work, the author says:

> One of the first steps in modifying the severe mechanism of the conventional program is to provide at least one long period of from thirty to fifty minutes a day in which the children may engage with some degree of real freedom in a variety of worth while activities. . . . . The next step is to take the reading out of the narrow confines of numerous ten- and fifteen-minute periods and get a longer stretch of time when the several groups will all be engaged in reading or activities related to reading . . . . When these two lines are successfully developed, it will be seen that much of the other work can be conducted in the same way and that the old program of twenty or twenty-five disjointed divisions is both unpsychological and inefficient.

The practical content, the non-technical treatment, the illustrations of progressive school practices, and the well-organized bibliography and list of

equipment will recommend the book to teachers, supervisors, and students in teacher-training schools. It is rare to find an author with such a thorough understanding of the scientific and the practical. This author's extensive experience as a teacher and supervisor in kindergarten and primary schools, and as a college professor of the educational theory and practice within these schools, makes her eminently qualified to point the way to a progressive program based upon scientific studies and sound educational practice.

Southern Branch, University of California KATHERINE L. MCLAUGHLIN

TROW, WILLIAM CLARK. *Scientific Method in Education.* Chicago, Houghton Mifflin Company, 1925. 159 pp.

This book is a delightful presentation of the case for the scientific method in handling educational problems. Across its pages walk the venerable shades of Copernicus, Galileo, Bacon, Pasteur, Binet, and others who were willing to oppose the régime of authority that truth might be discovered.

And the story is not finished even today. . . . . But if the findings by the use of the (scientific) method are contrary to the well-established teachings of authority, be it Man, Book, or Organization, there is certain to be conflict; for those of the Organization seem never able to learn that they do not have control over the uniformities of nature, which are gradually and painstakingly being discovered and called laws—that they are operative anyway, and no objuration or punishment of the finder of them and no amount of invective will change them in the least.

The author states further that since education has but so recently ventured forth from the kindly protection of authority, it has particular need to guard against the infringement of the first rule of scientific thinking, that of giving first place to facts.

There are so many ideas as to the sacredness of things as they are . . . . that it is too easy for the educator to view the facts turned up by surveys, by standardized tests, by carefully conducted experiments as merely grass to be mown down before the progress of his beguiling theories.

Thus one can see that the volume is neither "dry as dust" nor intelligible only to the statistician, but is well written in a terse, pungent style. Here and there are epigrammatic "high lights" which brighten up the author's presentation. On the whole, this monograph should aid in dispelling the polysyllabic fog in which so many members of the opposing schools of education now find themselves.

Ohio State University HARLAN C. KOCH

WALLON, HENRI. *L'Enfant Turbulent: Etude sur les Retards et les Anomalies du Dévelopment Moteur et Mental.* Paris, Librairie Félix Alcan, 1925. 653 pp.

Gradually the practical import of the new psychology of behavior is becoming more significant. It is increasingly evident that behavior is the resultant of many internal forces, not all of which are under the control of the individual himself. Such books as Mateer's *The Unstable Child* and Burn-

ham's *The Normal Mind* are paving the way for a general revamping of policies governing the treatment of individuals who deviate markedly from what is accepted as normal behavior.

The problem is one which looks for its solution to a thorough understanding of the nervous system and its functioning, both under conditions of normal mental and physical health, and under abnormal conditions. It is only as more information of this kind is at the disposal of the clinical psychologist that he will be able to advise the necessary medical or educational treatment. Not that the psychologist as such should presume to make the medical diagnosis, but for his own satisfaction and the respect which the medical profession should have toward him, the psychologist should be acquainted with the facts involved.

To the gradually increasing list of books in this field, is now added a recent book entitled *L'Enfant Turbulent,* by Dr. Henri Wallon. Based on a collection of over two hundred case studies rich in facts concerning hereditary conditions, personal histories, and the diverse circumstances which might influence physical and mental development, the text consists of an elaborate treatment of various structural defects and their causes. This material is later reorganized in a separate chapter dealing with the syndromes which serve to indicate internal conditions. Unfortunately for the purpose of the general student of psychology, the discussion is highly technical and does not distinguish clearly between the improvable and the non-improvable types of cases, and their respective treatments.

One of the most interesting chapters, probably the most readable of all, deals with the various theories that have been advanced for the interpretation of emotional activity. The author begins by discussing introspectionists with special reference to the pleasure-displeasure school of Külpe and Lehmann, and the hypo-hypersthenic theory of Féré, modified by Wundt and Lipps into excitation-inhibition. These he finds to be largely arbitrary abstractions which have no adequate explanation to offer concerning the causes of emotion. He shows how Dumas in making his study, "sadness and joy," discovered that organic modifications in the vegetative functions seemed to be caused by emotional activity. This brings him to the work of Langley, Cannon, and others, on the sympathetic system and the theories of emotion based on their findings. These he rejects as savoring too much of the teleological and the providential. They do not explain the diffused irradiation of emotion and the more or less systematized character of its reactions. To arrive at a working theory he undertakes an exhaustive analysis of sensori-motor activity in all its forms. He concludes that the visceral and tonic reactions may enter into the effects of emotion through the mechanism of the conditioned reflex. Thus the close relation of the emotional to mental life makes it the important factor in dealing with conduct of psychopaths and other forms of abnormal behavior.

H. B. CHAPMAN

Ohio State University

PRESSEY, S. L., and PRESSEY, L. C. *Methods of Handling Test Scores.* Yonkers-on-Hudson, World Book Company, 1926. 60 pp.

This little book comes as a welcome addition to the literature on testing. It not only demonstrates the simplest things that may be done with scores on standard tests, but it also gives abundant practice that will establish skill in handling test scores. The methods suggested within the book are simpler and easier than those which teachers ordinarily use. They do not involve difficult mathematics. They are the most natural ways of handling test data to give them meaning and make them useful in improving teaching.

The book is divided into ten lessons, dealing with tabulating, finding medians, using norms, noting relationships, making and interpreting tables and graphs. Each lesson is accompanied by practice exercises. Every point is amply illustrated by material taken directly from the classroom. *Methods of Handling Test Scores* is a combined source of information and practice for those who do not have the time to study a book dealing wholly with statistical method. The lessons might also serve to supplement a first course in colleges and normal school, dealing with educational measurements. Anyone looking for a brief and clear statement of methods of handling test scores will find this an adequate, non-technical, and concrete explanation of procedures that will save time and make work easier in interpreting the results of standard tests.

S. S. BROOKS

Ohio State University

CRABBS, LELAH MAE. *Measuring Efficiency in Supervision and Teaching.* New York, Teachers College, Columbia University, 1925. 98 pp. (Teachers College, Columbia University, Contributions to Education, No. 175)

This study undertook to accomplish three aims: (1) to evolve a technique of supervision based on measurement, (2) to evolve a technique of measuring the efficiency of this supervision, and (3) to apply the achievement-ratio technique of measuring the efficiency of teaching in both rural and urban school systems and to study certain problems that arise in the treatment of the data.

Within the first twenty-six pages of the book are described the measurement program, the program of supervision, and the evaluation of supervision. The measurement program was based upon intelligence and standardized educational tests. The supervisory program consisted in giving the tests informing the teachers regarding the nature of the tests and concerning the tabulated results, as well as a report of the results of a second repetition of the test. The evaluation of efficiency of the supervision is based upon the gains made by the pupils as shown by comparing the results of the preliminary and the final tests given, and by the general interest and attitude of the administrators and teachers toward a testing program.

In Part II are given the results secured by applying the formula,

Teacher Efficiency = Final Achievement Ratio — Initial Achievement Ratio,

to the work of each teacher involved in the study. The data secured in this way are used to answer a number of questions, a typical one of which is "To

what extent is a teacher's efficiency in teaching one subject an index of his efficiency in teaching other subjects?'' The final chapter of this division of the study discusses criticisms of the efficiency formula. Part III summarizes the study and states the conclusions.

This attempt to establish objective evidences of the efficiency of supervision is commendable. The findings, however, would have much more significance if there had been a similar test made of the pupils' gains under these same teachers over a similar period of time just preceding the inauguration of the supervisory program. The study presents no comparison between teaching efficiency without supervision and teaching efficiency with supervision.

The study does not afford data for diagnosing actual teaching performances, and it presents no data for diagnosing supervisory performances. The testing program as described is a program of inspection. The results of tests merely show a status of attainment. They do not show the causes of success or failure in the teaching that produced the status. Likewise the results of tests do not show the causes of success or failure in supervision that may have helped produce the status. Certain statements in the description of the study imply that some real supervisory activities were carried on, but no data are presented to show the results.

This study is a move in the right direction. It attacks one problem in supervision concretely and suggests a formula for evaluating teaching efficiency, that may be used to evaluate supervisory efficiency, provided adequate comparative data as suggested above are secured. The conclusions are challenging, and, whether valid or not, should stimulate further objective studies that meet the chief criticisms which Miss Crabbs, herself, makes upon the study.

H. W. NUTT

Ohio Wesleyan University

ROGERS, FREDERICK RAND. *Physical Capacity Tests in the Administration of Physical Education.* New York, Teachers College, Columbia University, 1925. 93 pp. (Teachers College, Columbia University, Contributions to Education, No. 173)

LENTZ, THEODORE F. *An Experiment Method for the Discovery and Development of Tests of Character.* New York, Teachers College, Columbia University, 1925. 46 pp. (Teachers College, Columbia University, Contributions to Education, No. 180)

WATSON, GOODWIN B. *The Measurement of Fair Mindedness.* New York, Teachers College, Columbia University, 1925. 97 pp. (Teachers College, Columbia University, Contributions to Education, No. 176)

Dr. Rogers, realizing the insufficiency of such static physical capacity measurements as age, weight, height, and grade, sets about determining some other measure which will facilitate prediction of ability in athletics and the grouping of children according to their physical well-being. To develop a criterion of athletic ability, scores on the 100-yard dash, running high and

broad jumps, bar vault, two-lap-run around indoor track, standing broad jump, eight-pound shot put, basket-ball goal tossing, baseball throwing, and football throwing at target are combined into an athletic index (A. I.) Dynamic physical capacity tests, including strength of grip in each hand, of back, of legs, of arms—both in flexion and extension—and forced lung capacity were combined into a strength index (S. I.).

The relationship between athletic index and strength index is expressed by a correlation coefficient of 0.81 or (curvilinearity existing) by an η of 0.85. A self-correlation of strength index gave an r of 0.94. The strength index of the median boy placed on school teams surpassed those of 95 percent of the boys in his group. The best players and captains of the teams have strength indexes not reached by 99 percent of their fellows. Some data are presented to prove that this index measures endurance as well as athletic ability.

The method of developing standards of strength index for various ages and weights, together with standards for the years from eleven to six and from nineteen to zero, is given. The child's actual strength index as compared with the normal strength index for age and weight gives a fitness index (F. I.) which permits the grouping of children on the basis of individual need and for proper instruction. The work is based on a sufficient number of cases to have a fair degree of statistical reliability.

Lentz' *An Experimental Method for the Discovery and Development of Tests of Character*, as the title indicates, is a method of attack rather than a finished piece of fact-finding research. The contributions of the author to the field of character testing, are, however, no whit less vital. They are the insistence upon the use of concrete life situations as criteria of character traits, the necessity of testing any differential unit or test on some other than the group upon which such differential unit or test has been established, the elimination or control of all variables other than the trait being measured, and data as to tests used and results determined, which will be of value—though the results are negative—to other workers in this field.

In his *The Measurement of Fair-Mindedness*, Watson defines fair-mindedness as the ability to achieve a z score on the tests devised; these tests give an approximate correlation of z with both reading ability and intelligence, having at the same time a high degree of reliability. The author attempts to prove the validity of these tests by such methods as the correlation of the scores on any one part of the test with the scores of the entire test or by the comparison of the individual's test score with the ratings on the same quality accorded him by some of his friends. This last method the author attacks in the opening paragraphs of his book. His chief error is that he does not meet the requirement of Lentz—whose work is also reviewed here—that a concrete life situation be used as the criterion of every character trait.

Ohio State University ATHNIAL R. CHAMBERS

Buckingham, B. R. *Research for Teachers.* New York, Silver, Burdette and Company, 1926. 386 pp.

I have read two reviews of this book which intimate that no more needful and engaging volume has come into educational circles this year. Perhaps I am not exactly the right person to review it, for I am prejudiced. The author and I used to work in offices a few feet apart up in the headquarters of the New York City Board of Education when Mr. Maxwell, the superintendent, was at the old educational game of first selecting a policy and then looking for facts to bolster it. Every school I knew about played that game in those days. They would lay down a dictum and set the computists to finding the figures to substantiate it. If the figures didn't do so they were pigeonholed. I remember Buckingham in that office, with the rattle and slam of the electricity-driven computing machines around him. The powers-that-be loaded upon him the 17697635979697396359 statistical jobs of the world's largest school system. What the sum of all the accounts were and how they varied from month to month, never affected any procedure of anybody, but they were recorded on a big sheet for April and then everybody set to work to catch up with the equally useless, delayed summaries for May.

In the midst of this mathematical stupidity I first met Buckingham and learned something of the new movement that proposed to use school statistics as a basis for action. In spite of the utter submergence of him in the deluge of secondary facts, Buckingham maintained a membership and correspondence with the growing movements of educational scientists and impressed all New Yorkers who came in contact with him that assaying, appraising, evaluating, measuring, assessing, rating, standardizing, estimating, the progress and the output of an educational organization is as necessary as taking the latitude and longitude of a ship at sea. I remember "the Duke," as we called Buckingham, found the old oratorical and gushing treatment of educational success a heavy drag on his attempt to show us that so long as we resisted being definitely measured, we degraded our business to guess work, unproved assertion, mushy sentiment, and fakirism. Buckingham could have stayed in the New York office until it ossified him, but he was a progressive student. He moved. Direction of fresh minds in research attracted him.

His book, *Research for Teachers* is a happy appreciation of the fact that every classroom is a potential observation station and every teacher is likely to be more interested, more entertained, more valuable if she grasps the large meaning of the research movement and gets into its procession. The book is singularly easy to read and understand. For an author who is absorbing scientific and technical discourse all the time to be able to transmute it into this clear, sprightly, and illuminating everyday English, is almost a miracle. The keynote of the treatise is the old Buckingham proposition he used to make in the New York office: "If we are worth our salt, we have got to know what results are worth while, how they are attained, and whether we are attaining them all along the line." Buckingham even finds himself taking off his hat to the ancient Greeks, but it is because they delivered the goods.

With an unhesitating move ahead, not halting to argue too much, but now and then enjoying a quiet laugh, the Duke accompanies us along a road of

profitable and interesting experiences; the length of lessons, the kinds of learning, the tricks of memorizing, the facts of "forgettery," and the big old question of whether training in one line transfers power to other lines. Cheer up, Buckingham will have it that it does carry over. I liked the treatment of "mental fatigue" and the quotations to show that accounts of it have been grossly exaggerated. I like him on "the enjoyability of school work for children, for teachers." "You tend to repeat what you enjoy; you tend to evade what you dislike." Come, then, let's kill off the few noisy complainers who are competing for the *Delineator's* prize for the best whine over teaching. I like the Duke's emphasis on telling children why they are to do this or that. This upsets my early schooling. The martinet who ran our school used to stick for "unquestioning obedience."

Buckingham is complete without tediousness. He covers what statistics the teacher needs. He convinces me that I should be working in the field of discovery even for the sake of keeping out of "boneheadedness": "There is no reason why a teacher at twenty-five should stop growing professionally; ossification is voluntary." The book is fine in its allurements to a teacher that she assume the systematic and developing methods of a Mme. Curie.

Buckingham reviews the current test literature entertainingly and covers new-type examinations. I have read no more constructive, reasonable, and tonic matter than his chapter on failures and promotions. It is stunning, just that. It cites experimental proof of the stupidity of a persistent practice as to promotion and retardation. You will enjoy the presentation and it ought to persuade you to lead a better life. The same effect may well follow your reading the parts of the book that have to do with the prevention of submerging the individual boy in the ruck.

Somewhere in the book, Buckingham, with his usual happy phrase, gives the reason for teachers joining the researchers. He has, too, a crisp statement of a fact about educational service today. "You can't talk loosely and oratorically of your job any more. General ideas and rhetoric have had their day. You've got to tell what, where, how many, how much." Isn't that rather neat? Well, the whole book is flavored with that kind of concise, summarizing, homely narration of fact.

Superintendent of Schools, Chicago WILLIAM MCANDREW

Publications Received, April 15 to July 15

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Universal shorter dictionary. Ed. by W. J. Pelo. Chicago, Winston, 1926. 440 pp. $.60.

Van Waters, Miriam. *Youth in conflict.* New York, Republic Pub. Co., 1926. 293 pp. $1.00.

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Walk, G. E. *A neglected factor in education.* New York, Gregg Pub. Co., 1926. 76 pp. $.20.

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West, Michael. *Learning to read a foreign language, an experimental study.* New York, Longmans, Green, 1926. 56 pp. $.65.

West, Ruth, and West, W. M. *The story of our country.* Boston, Allyn & Bacon, 1926. 578 pp. $1.80.

Whitney, B. A. *The parliamentary guide and practical chart.* Chicago, Lyons & Carnahan, 1926. 90 pp. $1.00.

Wilds, E. H. *Extra-curricular activities.* New York, Century, 1926. 273 pp. $2.00.

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Worcester, J. E. *A new school dictionary of the English language.* Rev. ed. Philadelphia, Lippincott, 1926. 389 pp. $.80.

Wright, J. C., and Allen, C. R. *The supervision of vocational education of less than college grade.* New York, Wiley, 1926. 415 pp. $3.00.

Young, N. J., and Memmott, F. W. *Good English in speaking and writing.* New York, Appleton, 1926. Seventh grade. 372 pp. Eighth grade. 376 pp. $.92 each.

Zaugg, W. A., and Clifton, J. L. *The government of Ohio.* New York, American Bk. Co., 1926. 96 pp. $.28.

News Items and Communications

This department will contain news items regarding research workers and their activities. It will also serve as a clearing house for more formal communications on similar topics, preferably of not more than five hundred words. These communications will be printed over the signatures of the authors. Address all correspondence concerning this department to Doctor E. J. Ashbaugh, Ohio State University, Columbus, Ohio.

Dr. F. B. Knight of the University of Iowa was a member of the summer faculty at Teachers College, Columbia University.

Dr. John A. Nietz has been appointed assistant professor in the Department of History and Principles of Education in the University of Pittsburgh.

Dr. M. R. Trabue, North Carolina University, and Dr. Fred C. Ayer of Washington University, gave courses at Stanford University during the summer.

Under the Colorado Research Foundation a state survey of the selective character of secondary education in Colorado is being carried on, directed by Dr. Frederick L. Whitney.

Dr. E. J. Ashbaugh, assistant director of the Bureau of Educational Research of Ohio State University, was on the summer staff at the University of Washington during the past summer.

During the past summer, Dr. C. C. Peters of Ohio Wesleyan University taught Educational Sociology at the Southern Branch of the University of California at Los Angeles.

Over twenty thousand high-school pupils in Kansas participated in the school scholarship contests. The contests which were of three different types were held in eighteen different subjects.

The World Book Company has brought out an experimental edition of a number of tests prepared for the Modern Foreign-Language Study. Among these are tests in French by Henmon and Coleman, and in German by Henmon, Morgan, and Turin.

Harold H. Bixler, director of guidance and research in the Atlantic City Public Schools, will be on leave of absence during the year 1926-27 to hold the position of Associate in Elementary Education at Teachers College, Columbia University.

Longbeach, California, is opening its new senior high school in September with Mr. David Segel in charge of high-school research. Miss Alta Williams, formerly a junior high-school counselor, has been assigned to curriculum research.

The National Council of English Teachers is making an inquiry concerning English in our schools. This Council has sent out a series of questionnaires to be answered by (1) the principals of the high schools, (2) teachers of English, (3) senior or junior pupils in high school, and (4) graduates of high school.

The Department of Research in the Kalamazoo public schools made a survey of penmanship in grades III-B to VI-A inclusive, in eleven elementary schools. The results tended to show striking variations among schools in regard to relation of speed and quality of the pupils.

Survey Series Number Ten of Fresno (California) public schools, reports a survey of the high sixth grade with certain standardized tests. Reports on tests are given by individual schools in a graphic manner, which show range of scores, range of middle fifty percent, and median.

Civic Education in the Lincoln Schools is the latest report of the superintendent of schools, Lincoln, Nebraska. The bulletin contains some illustrations of civic education as observed in grades one to eight inclusive. Contributions of regular school subjects to civic education are also pointed out.

Harriet M. Barthelmess is investigating the history of progress in test validation, with special emphasis on the detailed elements of which the tests are composed, showing: (1) the methods that have been used, (2) logical arguments against the use of each, and (3) statistical evaluations adopted.

Under a grant from the Commonwealth Fund, Dr. W. W. Charters is making an analysis of the duties of teachers in high and elementary schools. He is also beginning an analysis of the duties of city and county superintendents as well as those of principals of high and elementary schools.

The Clapp Drill Books in Arithmetic by Professor F. L. Clapp of the University of Wisconsin represent the result of many years of careful investigation concerning pupils' errors in arithmetic work. They are in strict accordance with the modern tendency to endeavor to "put the oil where the squeak is."

Colorado State Teachers College through its Department of Educational Psychology and in cooperation with different school systems, is investigating the relative influence of intelligence and school attendance upon individual differences in school achievement. One thousand ten-year-old children have been examined. The results will be published in the *Yearbook of the National Society for the Study of Education*, 1928.

Projects and the Project Method, is the title of Educational Research Circular Number 43, University of Illinois, by W. S. Monroe, director of the Bureau of Educational Research. The bulletin defines the term "project" and discusses types of projects, points of view, and something of the technique.

A mimeographed bulletin from the Department of Reference and Research of the New Trier (Illinois) township high school shows that men teachers grade both boys and girls higher than women teachers in all except commercial subjects. It also shows that girls receive a markedly larger proportion of A and B grades than boys.

R. R. Ryder, who has been doing work leading to the doctorate in the University of Chicago, has been appointed Assistant Professor of Education at Purdue University. He will have charge of practice teaching and special methods in high-school subjects. Mr. Ryder's problem at the University of Chicago deals with the factors which determine good reading.

The Department of Elementary School Principals of the National Education Association is attempting to raise the professional standards of its members. The association has recently sent a letter to superintendents and boards of education throughout the United States asking their cooperation in setting standards for the elementary principalship similar to those of the high-school principal.

The Educational Research Club of Cleveland has closed a prosperous year. Twenty-six research reports have been given. The following officers have been elected for the ensuing year: president, Joseph Baer; vice-president, Dr. Bertha Luckey; second vice-president, Roy LaDu; secretary, Miss May Lane; treasurer, S. S. Dickey.

The Department of Educational Measurements of West Allis, Wisconsin, on the basis of the Thorndike-McCall test of reading achievement in grades IV-B to VI-A inclusive, showed that 48 percent of the pupils were of average achievement or within one year of the grade norm, 24 percent were superior, or two and three years above norm, and 13 percent were very superior, or more than three years above normal.

The University of Minnesota has issued during the past three years, four volumes in the field of public-school finance by Dr. F. H. Swift and others. The fourth volume is devoted to the problems of the south as illustrated by the states of Arkansas, Oklahoma, Alabama, and Tennessee. Dr. Swift's assistant in this study was John H. Goldthorpe, a graduate student in education at the University of Minnesota when the study was made. The data for these states are handled in the thorough manner that has become well known to the readers of Dr. Swift's other studies. It is a contribution of value not only to the states immediately concerned but to education throughout the nation.

As part of the celebration of the Fiftieth Anniversary of the founding of Johns Hopkins University, an effort is being made to establish the Edward Franklin Buchner Research Fund in Education. The campaign is for fifty thousand dollars, and subscriptions are being solicited from friends of Dr. Buchner and the institution, who wish to perpetuate the professional and scientific influences which have characterized his many years of service to education.

A Study of Pupil Classification in the Villages of New York State, by Warren W. Coxe, is the title of Bulletin Number 841, of the University of the State of New York. The bulletin presents the results of the use of the Otis Classification Test in thirty-seven villages in that state. Chronological age, mental ability, and school achievement are discussed as bases for classification.

Dr. Clyde M. Hill, president of the State Teachers College, Springfield, Missouri, has completed a survey of the changes in the Missouri state teachers' colleges during the ten-year period since the Carnegie Survey which was reported in the Foundation's well-known Bulletin, No. 14. Very significant advances have been made during the period studied.

Dr. R. L. Morton, Ohio University, Athens, Ohio, has prepared a report entitled "Teacher Training as a State Function," which has been published by the Ohio State Teachers Association. It shows the need of additional state teachers' colleges and quotes opinions from various state superintendents on the value of county normal schools.

Superintendent L. L. Caldwell of Hammond, Indiana, has issued to his teachers an attractive mimeographed pamphlet on "The Question as a Means of Teaching." Characteristics of good thought questions, common faults of questions, and so on, are treated in a brief but illuminating manner. Teachers are also referred to standard references for further reading on the subject.

On the basis of a re-test with the Kirby Grammar Test, after one year, the schools of Grand Rapids, Michigan, report a definite gain, being now above the standard instead of below. This is true both in the number of sentences answered correctly and in the principles known by the pupils. A significant increase is also shown from the seventh to the twelfth grade in the knowledge of grammatical principles underlying correct usage.

A Study of Pupil Achievement and Special Class Needs in Westbury, Long Island, is the title of a bulletin of the University of the State of New York by W. W. Coxe and Ethel L. Cornell. It reports a survey conducted by the State Department in which both intelligence and achievement tests were used. Some comparable data are made available for use in other communities, but special interest will probably be found in that part devoted to the need for special classes with individual case reports.

Kansas City is one of the cities of the country which has available child-accounting data over a considerable period of time. Mr. George Melcher, assistant superintendent, in charge of research, furnished us with the following figures recently:

Year	Percent of Over-ageness
1893	63.5
1902	50.6
1912	46.2
1922	26.1
1925	23.0

This calculation is on the basis of the two-year range considered normal in each grade.

The National Publishing Society, Mountain Lake Park, Maryland, has published a National Spelling Scale for senior high schools, by J. J. Tipton, assistant superintendent of schools, Allegany County, Maryland. The words in the scale were selected from the vocabularies of five widely used modern spelling books, all words common to any two of the books being included. Additional words were selected from Thorndike's *The Teacher's Word Book*, and spelling difficulties were checked against various spelling scales. All words are presented in sentence form, and norms in terms of spelling age are included.

Service Bulletin, January 1926, of the Chicago Principals' Club discusses pupil failures and subject failures in the Chicago public schools. This booklet was prepared by Don C. Rogers, special secretary of the Chicago Principals' Club, collaborating with E. E. Keener, supervisor of instructional research. The following table may be of interest for comparative purposes:

Grades	Percent Failed		Grades	Percent Failed	
	Pupils	Subjects		Pupils	Subjects
I-B	22.6	22.6	VII-B	8.1	8.3
I-A	14.8	.....	VII-A	7.2	.....
II-B	9.8	9.9	VIII-B	5.0	6.6
II-A	9.1	.....	VIII-A	2.4	.....
III-B	8.1	9.6	IX-B	.....	15.4
III-A	9.6	.....	IX-A	.....	.....
IV-B	8.0	9.2	X-B	.....	12.8
IV-A	8.1	.....	X-A	.....	.....
V-B	7.6	7.2	XI-B	.....	10.3
V-A	8.1	.....	XI-A	.....	.....
VI-B	7.3	6.9	XII-B	.....	5.6
VI-A	7.8	.....	XII-A	.....	.....